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TRANSACTIONS

OF THE

SOCIETY

INSTITUTED AT LONDON,

FOR THE

ENCOURAGEMENT

OF

ARTS, MANUFACTURES, and COMMERCE;

WITH THE

PREMIUMS offered in the YEAR 1795.

VOL. XIII.

LONDON:

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M.DCC.XCV.

PREFACE.

EVERY attentive Reader of the following pages will find, that the Society for the Encouragement of Arts, Manufactures and Commerce, have this year, in purſuance of their plan, offered ſeveral new Premiums, ſome of which it may not be altogether improper or unneceſſary to enumerate. As, under the head of AGRICULTURE, it had been ſuggeſted in a letter from an ingenious correſpondent, which is inſerted page 210, that the growing of Oak Timber in Compaſs-Forms for the uſe of Ship-builders, would tend very much to the advancement of their Art, and be of great benefit to the Navy of this country; a Premium has been offered for diſcovering

the moſt proper and advantageous method of obtaining wood, in the proper ſhapes, for the purpoſe intended, and which, there is good reaſon to believe, will hereafter be attended with very beneficial conſequences to the nation at large.

Another new object of the Society's attention has been the carrying into effect, what was ſuggeſted in ſome former volumes of theſe Tranſactions; the improving the ſtanding Fruit-trees in the Orchards of this kingdom. For this purpoſe, ſeveral Premiums are now offered (ſee Claſs 74 et ſeq.); and it is hoped, that when the wiſhes of the Society on this ſubject ſhall be realized, not only the ſtate and appearance of the Orchards, in different parts of this country, will be much amended, but the Fruits themſelves highly meliorated, and the buſineſs of the orchardiſt ſo arranged and ſettled, that a ſucceſſion of fine Fruit may be effectually ſecured.

The

The great ſcarcity of Grain, which unfortunately has taken place in every country in Europe, has occaſioned the Society to turn their thoughts towards ſuch plants as may be moſt likely to furniſh what might, in ſome degree, ſupply the place of Bread-corn: to this purpoſe, the Potatoe ſeems beſt adapted; and in order, as much as lies in the power of the Society, to forward an increaſed cultivation of that excellent plant, ſome new Premiums are this year offered, (ſee Claſs 96, 97) which, if effectually attended to, will probably be followed by ſome very conſiderable advantages to the Public in general, and to the induſtrious and laborious poor in particular.

In ſome parts of the kingdom, the practice of dibbling wheat has been carried to a conſiderable extent, and, as has been ſaid, with many material advantages. Premiums have for ſeveral years paſt been offered by the Society, though hitherto without any claimants appearing for them, to aſcertain the

comparative advantage of cultivating Wheat, by ſowing it in the broad-caſt way, or dibbling it in equidiſtant rows, hoeing the intervals (ſee Claſs 84). And this Seſſion, a Premium has been firſt offered for conſtructing a machine for dibbling corn, by which, if a ſimple machine, well adapted to the purpoſe, can be obtained, the price of labour in getting the ſeed into the ground, which has hitherto been conſidered as the principal objection to the practice, will be effectually obviated.

Under the head of CHEMISTRY, a new premium has this year been offered, for diſcovering a cheap and effectual method of purifying brackiſh Water, in new-made Wells, ſo as to bring it ſpeedily into a fit ſtate for the uſe of families. See Claſs 175.

It has already been obſerved, that the ſcarcity of Bread-corn, which has unfortunately taken place throughout all Europe, has induced the Society to endeavour to increaſe

creaſe the culture of that vegetable (the Potatoe) which ſeems beſt adapted to ſupply the place of wheat, as food; but there is another great conſumption of that grain, which the Society has endeavoured to leſſen, by offering a Reward for making Starch from the Fruit of the Horſe-cheſnut, under the head of Manufactures. As this fruit is conſidered of very little, if any, uſe; and a ſmall quantity of Starch, in fine powder prepared from it, has been produced to the Society; it has been judged a fit object for their attention; and accordingly, the premium, Claſs 207, has been offered. But, although a caution is given in the *Nota bene* ſubjoined to that advertiſement, warning all perſons who are not duly licenſed ſtarch-makers, from making any experiments on that ſubject, yet it may not be improper here again to mention, that the laws of exciſe are ſo ſevere on this head, that people cannot be too cautious how they infringe them, by attempting to make ſtarch of any material, or in any manner or place, unleſs ſtrictly

conformable to the ſeveral Acts of Parliament in force on that head.

When ſo many perſons are employed in the mineral countries of this kingdom, in ſearch of the ores, &c. with which it abounds, every attempt to leſſen the expence and labour of the proprietors and workmen muſt be judged laudable: it is for this reaſon that, under the head of Mechanicks, Claſs 224, will be found a Premium for diſcovering a cheap and more expeditious method of Boring Rocks in Mines than any now in practice; and to every one acquainted with the difficulty which frequently attends this operation, and the neceſſary charges incurred to the proprietors thereby, the endeavouring to obtain a more effectual mode of conducting this kind of work, will be conſidered as an object of very material importance to ſome of the moſt extenſive concerns in this country.

Having

Having thus enumerated the principal Premiums, which have not before this Seſſion been offered by the Society; there only remains to ſay on this head, that, in order ſtill further to encourage ingenuity, and to reward uſeful attention and deſert, the Society have this year added to their former rewards, ſeveral honorary Medals, and alſo increaſed, in many inſtances, their pecuniary Premiums; hereby ſhewing their determined intention to fulfil, by every means in their power, the views of their inſtitution.

Among the ſeveral letters and papers inſerted in this Volume, will be found an account of the planting Acorns, by Samuel Kilderbee, of Ipſwich, Eſq. with ſome judicious remarks on that ſubject. Accounts alſo of the plantations of Oſiers, by Lord Brownlow, John Phillips, Eſq. and Samuel Crawley, Eſq. are introduced; and here it may be highly proper to mention the occaſion that gave riſe, in the Society,

Society, to the offering Premiums for increaſing the Plantations of Oſiers in this country.

Application was made to the Society, in the year 1794, by many of the principal Baſket-makers in and about London, ſaying, that, from the want of Oſier-twigs, great numbers of the working people were thrown out of employment, and the whole of their buſineſs almoſt at a ſtand. On enquiry, it appeared, that great quantities of theſe twigs had annually been imported from France; and all intercourſe with that country being ſtopped, a ſufficient quantity, the growth of England, could not be obtained: this induced the Society to offer ſuch Premiums as, it was thought, would be ſufficient and proper to encourage the further growth of that uſeful plant in our own country; more eſpecially as it appeared, from the evidence produced, that the culture of the proper kind of Oſiers on land well adapted to their growth, was likely

likely to be very advantageous to the planter. And the event has fully juſtified the Society in their procedure; for it now appears, that not only a much larger quantity of Oſiers, the growth of England, has been within theſe two years brought to market; but there is reaſon to believe, the plantations are every where, on proper ſoils, increaſing; ſo that, in time, all neceſſity of importing them from foreign countries will ceaſe; and this will be more evident, when the great profit of ſuch plantations becomes more generally known.

One of the moſt favoured objects of the Society's attention, the planting Timber-trees, has this ſeſſion been gratified, by the account of the plantation made by Thomas Rawlinſon, Eſq. and this on land which, from its high and expoſed ſituation, as well as from the immenſe rocks of lime-ſtone that every where covered its ſurface, was not till very lately conſidered as meriting the attention of a cultivator; but which, from

from the preſent ſtate of the plantation, promiſes not only to be highly ornamental to the neighbouring country, but in due time very advantageous to the proprietor.

The papers of Mr. Henry Harper and Mr. John Jenkinſon, will, it is preſumed, afford much uſeful information on the ſubject of improving Waſte Land; and as the two ſorts of ſoil improved by theſe gentlemen differ moſt eſſentially from each other, the Public cannot fail of profiting by the obſervations made in the two Papers, as well as by thoſe of Mr. Middleton, as given in his letter on an improved courſe of Crops on Strong Land.

The ſamples of Rhubarb, grown and cured by Mr. Ball, of Williton, now give full aſſurance, that that uſeful drug may be cultivated and cured in England equally well as in any other climate or country whatever.

The

The preparing White Lead, of which very large quantities are employed in painting, glazing, &c. being a chemical operation, there is inſerted in this Volume, under the head of Chemiſtry, a plate and full deſcription of a method of preventing the ill effects of the duſt which ariſes in manufacturing the white lead, and is conſtantly ſo injurious to the workmen; and there is every reaſon to believe, that if the method here ſhewn is generally adopted and carried into execution, the far greater part of the danger to which they are expoſed will be removed. It may not be amiſs here to mention, that the ſecuring the health and lives of thoſe workmen who are engaged in mineral works, and who, from the nature of their employment, are ſubject to be injured by the fumes or duſt to which they are neceſſarily expoſed, has ever been conſidered as highly deſerving the Society's regard: hence, ſome years ſince, a reward was beſtowed, for the diſcovery of an apparatus, to prevent the miſchief

chief ariſing to Water-gilders from the fumes of the quickſilver employed by them. Of this apparatus a complete model remains in the Society's Repoſitory, for the inſpection of the Public, as well as one, ſhewing the method invented by Mr. Ward, and practiſed by him, for ſecuring the workmen in the manufacturing of white lead.

Under the head of MANUFACTURES is inſerted, in this volume, an account of a further improvement in the conſtruction of the common Spinning-Wheel, by Mr. John Antis (ſee his former account, Vol. II, page 157): by the change of ſome parts of the mechaniſm, thoſe inaccuracies, that, from the conſtruction of the pinion, aroſe in the movement, are effectually obviated; the friction of the whole machine conſiderably abated; and the mode of adjuſting the velocity of the bobbin to the quantity of thread thereon, rendered more accurate; the general principle of moving the bobbin backward and forward, ſo as to lay the

the thread on it equally ſmooth from end to end, being ſtill retained; and by the introduction of the heart-ſhaped movement, the whole operation is carried on with much more exactneſs and preciſion than in any that have hitherto been produced to the Society.

As, on the improvement of mechanical Engines, the advancement of the Manufactures, and ultimately the Arts and Commerce, of the Kingdom, muſt in a very material manner depend; the Society have, from the time of their inſtitution, invariably endeavoured, by every means in their power, to bring forward to public uſe and notice, all ſuch machines as have a tendency to promote that end: from this has ariſen the great number of Machines and Models, that are reſerved in their Repoſitories, which being open to the free and uninterrupted examination of all perſons, it is well known great advantages have ariſen, as well to the ingenious workmen, as to the learned

and ſcientific obſervers: and from hence, although the far greater number of theſe machines and models, being the firſt thoughts of the inventors, are not in ſuch perfection as they have been brought to by other ingenious perſons who have inſpected them; yet they have undoubtedly ſerved the purpoſe intended by the Society, of furniſhing hints for the improving and perfecting the Mechanick Arts in this Country; and of this many inſtances are well known. In purſuance, therefore, of the intention of the Society to afford encouragement to all uſeful contrivances in the line of Mechanicks, it will be found by the following papers, that a Reward, under this head, has this ſeſſion been given to Mr. John Foulds, for his improved method of cutting Piles under Water, which, in the opinion of ſeveral of the beſt-informed perſons in this country, is new, ingenious, and well adapted to the purpoſe intended; and of which a Plate and Deſcription are inſerted in this volume;

and the model is alſo reſerved in the Society's Collection.

Whoever conſiders the ſolid advantages that have ariſen to the world at large, by the diſcovery of Printing, whereby learning and knowledge have been diſſeminated in a manner unknown in former ages, will readily agree, that every attempt to bring ſo valuable an art to the higheſt degree of perfection it is capable of, deſerves the moſt ſerious attention and liberal encouragement; and in the following pages will be ſeen a plate of an improved Printing-preſs, by Mr. Joſeph Ridley, with a deſcription of it: as the conſtruction of this machine differs very eſſentially from thoſe hitherto uſed for the ſame purpoſe, it will be highly acceptable to the Society, ſhould any one adopt preſſes of this conſtruction, to receive ſome well-authenticated accounts of ſuch further improvements (if any are thought neceſſary) as may be made in them, and of the advan-

tages that may reſult to the Art of Printing from the uſe of them; ſhould any perſon wiſh for further information relative to the mechaniſm of this preſs than is to be found in the following pages, a working model is reſerved in the houſe of the Society, which may at any proper time be inſpected.

Here, too, will be found a plate and full deſcription of a new-conſtructed Churn, and a Drag for two-wheeled Carts; both of which have, on trial, anſwered the intentions of the inventors.

In the other Claſſes, into which the buſineſs of the Society is divided, no papers have this ſeſſion been received that have been judged proper for publication; but it may not be unſatisfactory to the Public to be informed, that in a letter from the Iſland of St. Vincent, addreſſed to General Melville, (†) and by him communicated

(†) The Botanical Garden, in the Iſland of St. Vincent, was founded in the year 1765, by Gene-

cated to the Society, there is the following paſſage: "General Melville will have "much pleaſure to hear, that the Bread-"fruit trees flouriſh ſo ſurpriſingly in the "Botanic Garden, that one tree has "brought two of the fruit to maturity, "and ſeveral more are bearing. They far "exceed our expectation in delicacy of "taſte (†); are throwing out many ſuckers, "and in a few years will be as plentiful as "in Otaheite. Many other plants, brought "by the Providence, Captain Bligh, have "produced flowers and fruit; but, next to "the Bread-tree, the Cheſnut appears to "be the moſt valuable."

ral Melville, when he was his Majeſty's Governor in Chief of St. Vincent, and the other ceded iſlands in the Weſt-Indies.

(†) By a ſubſequent letter it appears, that the trial of the Bread-Fruit above alluded to, was made, by eating it at the Governor of St. Vincent's public dinner, to celebrate Her Majeſty's birth-day on the 18th of January laſt.

In the Twelfth Volume of theſe Tranſactions, page 305, a full liſt of the ſeveral plants conveyed by Captain Bligh to the Iſlands in the Weſt Indies is given; and it is with ſingular ſatisfaction the Society obſerve, that after an interval of ſeventeen years, during all which time Premiums for the introduction of the Bread-fruit were offered, that deſirable object has at length been obtained; and it is now only to be hoped, that the diſturbances that have ariſen in ſome of thoſe iſlands will not injure ſo valuable an acquiſition.

Still further to promote the intereſts and welfare of the inhabitants of thoſe climates, the Society have now thought proper to offer Premiums for the culture of that tree (ſee Claſs 229), which there is every reaſon to believe will in time become of the greateſt benefit to the people in the iſlands of the Weſt Indies.

Having

Having thus expatiated pretty fully on the contents of the preſent Volume, it is no further neceſſary to lengthen this Preface, than to obſerve, that the print of the ſtatue of Narciſſus, which forms the frontiſpiece to the book, is executed by Mr. Iſaac Taylor, from the caſt of that ſtatue, preſented to the Society, by John Bacon, Eſq. R. A. after a drawing by Mr. John Thomas Barber, for which the Silver Medallion was adjudged to Mr. Barber, in conformity to the will of the late John Stock, of Hampſtead, Eſq. (ſee page 270.) The remainder of the Plates, which are more in number than in any preceding Volume, will, it is hoped, ſufficiently explain the ſeveral Models, &c. they are intended to repreſent; and nothing, therefore, further need be obſerved concerning them.

As the ſtate of the Finances of the Society are ſuch as to enable them to proſecute the intention of their inſtitution, and reward any merit that may come before

them; all ingenious perſons are invited to produce to the Society, ſuch works as may have a tendency to improve the Arts, the Manufactures, or Commerce of the kingdom, which will not fail to meet ſuch encouragement as they may be found to deſerve; and thereby the Candidates will obtain honour and profit to themſelves, with the ſolid ſatisfaction of having been the means of promoting the good and welfare of their native country, by contributing to the only permanent ſupport of it.

CONTENTS.

	Page
Preface	
Premiums offered in 1795	1
Papers in Agriculture	119
Papers in Chemiſtry	219
Papers in Manufactures	231
Papers in Mechanicks	239
Rewards beſtowed	265
Preſents received	273
Catalogues of Models and Machines	278
Liſt of Officers	281
Liſt of Members	285
Index	331

PREMIUMS

OFFERED BY THE

SOCIETY

FOR THE ENCOURAGEMENT OF

ARTS, MANUFACTURES,

AND

COMMERCE,

IN

THE YEAR M.DCC.XCV.

TO THE

PUBLIC.

ADELPHI-BUILDINGS,
April 8, 1795.

THE chief objects of the attention of the Society for the Encouragement of Arts, Manufactures, and Commerce, in the application of their Rewards, are, Ingenuity in the ſeveral branches of the POLITE and LIBERAL ARTS, uſeful Diſcoveries and Improvements in AGRICULTURE, MANUFACTURES, MECHANICKS, and CHEMISTRY, or the laying open any ſuch to the Public; and, in general, all ſuch uſeful Inventions, Diſcoveries, or Improvements (though not mentioned in the Book of Premiums), as may appear to have a tendency to the advantage of Trade and Commerce. The Society therefore, in purſuance of their plan, propoſe to beſtow the following Premiums.

Premiums for Planting and Huſbandry.

Claſs 1. ACORNS. For having ſet, between the firſt of October, 1794, and the firſt of April, 1795, the greateſt quantity of land, not leſs than ten acres, with Acorns, with or without ſeeds, cuttings, or plants of other trees, at the option of the Candidate; and for effectually fencing and preſerving the ſame, in order to raiſe timber; the GOLD MEDAL.

2. For the ſecond greateſt quantity of land, not leſs than five acres, ſet agreeably to the above conditions, the SILVER MEDAL.

CERTIFICATES of ſetting agreeably to the above conditions, and that there are not fewer than three hundred young Oaks on each acre, to be delivered to the Society on or before the firſt Tueſday in November, 1795.

3, 4. The ſame premiums are extended one year further.

CERTI-

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1796.

5, 6. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1797.

7, 8. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1798.

9. RAISING OAKS. To the perſon who ſhall have raiſed, ſince the year 1791, the greateſt number of Oaks, not fewer than five thouſand, either from young plants, or acorns, in order to ſecure a ſucceſſion of oak timber in this kingdom; the GOLD MEDAL.

10. For the next greateſt number, not fewer than three thouſand, the SILVER MEDAL.

CERTIFICATES that there were on the land, upon the firſt of November, 1794, at leaſt the number of young Oak-trees required, in a thriving condition, with an account of the methods purſued in making and managing the plantation, to be produced to the Society on or before the firſt Tueſday in January, 1796.

11, 12. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1797.

13, 14. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

15. ASCERTAINING THE BEST METHOD OF RAISING OAKS. To the perſon who ſhall aſcertain in the beſt manner, by actual experiments, the comparative merits of the different modes of raiſing

fing Oaks for timber, either from acorns ſet on land properly grubbed and tilled; from acorns ſown at random among buſhes, fern, or other cover; or from young plants, previouſly raiſed in nurſeries, and tranſplanted; regard being had to the expence, growth, and other reſpective advantages of the ſeveral methods; the GOLD MEDAL.

The ACCOUNTS and proper CERTIFICATES to be produced to the Society on or before the firſt Tueſday in November, 1795.

16. The ſame premium is extended one year further. The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in November, 1796.

17. OAK TIMBER IN COMPASS FORMS. To the perſon who ſhall aſcertain, by actual experiments, the beſt method of training young Oaks, ſo as to form Compaſs Timber for Ship-building, the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES of the number of Oak-plants, not fewer than one hundred, that have been trained; and that they promiſe, in the opinion of perſons experienced in ſhip-building, to anſwer the purpoſe intended; to be delivered to the Society on or before the laſt Tueſday in December, 1805.

It is required that with the Certificates there be ſent particular accounts of the age of the trees, when they were begun to be trained, and the methods purſued in training them.

Should any perſon have already engaged in training Oaks for the above purpoſe, any information on the ſubject will be thankfully received by the Society.

18. CHESNUTS. For having ſown or ſet, between the firſt of October, 1794, and the firſt of April, 1795, the greateſt quantity of dry loamy land, not leſs than ſix acres, with Spaniſh Cheſnuts, with or without

without ſeeds, cuttings, or plants of other trees adapted to ſuch ſoil, at the option of the Candidate; and for effectually fencing and preſerving the ſame, in order to raiſe timber; the GOLD MEDAL.

19. For the ſecond greateſt quantity, not leſs than four acres, the SILVER MEDAL.

CERTIFICATES of ſowing or ſetting agreeably to the above conditions, and that there are not fewer than three hundred Cheſnut plants, in a thriving ſtate, on each acre, to be delivered to the Society on or before the firſt Tueſday in November, 1795.

20, 21. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1796.

22, 23. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1797.

24, 25. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1798.

26. ELM. For having planted the greateſt number of the Engliſh Elm, not leſs than eight thouſand, between the twenty-fourth of June, 1793, and the twenty-fourth of June, 1794; and for the having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

27. For the ſecond greateſt number, not leſs than five thouſand, the SILVER MEDAL.

CERTIFICATES of the having planted agreeably to the above conditions, that the plants were in a healthy and thriving ſtate

two years at leaſt after making the plantation, and ſpecifying the diſtance of the plants, to be delivered to the Society on or before the firſt Tueſday in November, 1795.

28, 29. The ſame premiums are extended one year farther.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1796.

30, 31. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1797.

32, 33. The ſame premiums are extended one year further.

CERTIFICATES to be produced or or before the firſt Tueſday in November, 1798.

34. LARCH. For having planted out, between the twenty-fourth of June, 1792, and

and the twenty-fourth of June, 1793, the greateſt number of Larch-trees, not fewer than five thouſand; and for having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

35. For the next greateſt number, not fewer than three thouſand, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they were in a healthy and thriving ſtate two years at leaſt after they were planted out, with a general account of the methods uſed in making the plantation, to be delivered to the Society on or before the laſt Tueſday in December, 1795.

36, 37. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1796.

38, 39. The ſame premiums are extended one year further.

CERTI-

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1797.

40, 41. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1798.

42, 43. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1799.

N. B. The Larch-trees may be either planted, mixed with other trees, or by themſelves, as may beſt ſuit the convenience of the planter.

44. SILVER FIR. For having planted out, between the twenty-fourth of June, 1791, and the twenty-fourth of June, 1792. in a mixed plantation of foreſt-trees, or ſeparate, according to the option of the Candidate, the greateſt number of Silver Firs,

Firs, not fewer than two thouſand; and for having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

45. For the next greateſt number, not fewer than one thouſand, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they were in a healthy and thriving ſtate two years at leaſt after they were planted out, with a general account of the methods uſed in making the plantation, to be delivered to the Society on or before the laſt Tueſday in December, 1795.

46, 47. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1796.

48. 49. The ſame premiums are extended one year further.

CERTI-

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1797.

50. UPLAND OR RED WILLOW. For the greateſt number of acres, not leſs than three, planted before the end of April, 1793, with Upland or Red Willow, properly fenced and ſecured; the number of plants on each acre to be at leaſt twelve hundred; the GOLD MEDAL or THIRTY GUINEAS.

CERTIFICATES of the number of plants, and that they were in a thriving ſtate at the time of ſigning ſuch Certificates, to be produced to the Society on or before the laſt Tueſday in November, 1795.

It is well known that this ſpecies of Willow thrives well on dry ſandy land.

51. OSIERS. To the perſon who ſhall have planted, between the firſt of January and the firſt of May, 1795, the greateſt quantity of land, not leſs than three acres, with

with thoſe kinds of Willows, commonly known by the names of Oſier, Spaniard, or New-kind, fit for the purpoſe of baſket-makers, not fewer than twelve thouſand plants on each acre; the GOLD MEDAL or TWENTY GUINEAS.

52. For the ſecond greateſt quantity of land, not leſs than two acres, the SILVER MEDAL, or TEN GUINEAS.

CERTIFICATES of the planting, and that the plants were in a thriving ſtate five months at leaſt after the planting, to be produced on or before the laſt Tueſday in November, 1795.

53, 54. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in November, 1796.

55. ALDER. For having planted, in the year 1792, the greateſt number of Alders,

ders, not leſs than three thouſand, on an eſtate the property of one perſon; the GOLD MEDAL.

CERTIFICATES of the number of plants, and that they were in a thriving ſtate two years at leaſt after being planted, to be delivered to the Society on or before the laſt Tueſday in December, 1795.

56. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1796.

57. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1797.

58. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1798.

59. ASH. For having ſown or ſet, in the year 1797, the greateſt quantity of land, not leſs than ſix acres, with Aſh for timber, with or without ſeeds, cuttings, or plants of ſuch other trees as are adapted to the ſoil; the GOLD MEDAL.

60. For the next greateſt quantity, not leſs than four acres, the SILVER MEDAL.

CERTIFICATES of the ſowing or ſetting agreeably to the above conditions, that there are not fewer than one hundred Aſh plants on each acre, in a thriving and healthy condition, two years at leaſt after the ſowing or ſetting, with a general account of the methods uſed in making the plantation, to be delivered to the Society on or before the laſt Tueſday in December, 1795.

61, 62. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1796.

63, 64. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1797.

65, 66. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1798.

67, 68. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1799.

69. TIMBER-TREES. To the perſon who ſhall have incloſed, planted, or ſown, the greateſt number of acres, not leſs than ten, with the beſt ſorts of Foreſt-trees adapted to the ſoil, for timber, between the firſt of October, 1791, and the firſt of May, 1793; the GOLD MEDAL.

An account of the methods uſed in making the plantations, and of the nature of the ſoil, together with proper Certificates that the trees were in a thriving and healthy ſtate two years at leaſt after making the plantation, to be delivered to the Society on or before the firſt Tueſday in November, 1795.

70. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1796.

71. The ſame premium is extended one year further.

The

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1797.

72. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1798.

N. B. With the above Foreſt-trees, the ſeeds, cuttings, or plants, of ſuch other trees as are adapted to the ſoil, and proper for underwood, may or may not be intermixed.

73. PLANTING BOGGY OR MORASSY SOILS. For an account of the beſt ſet of experiments ſent by the planter, or his repreſentative, to aſcertain the comparative advantages of planting boggy or moraſſy ſoils with White Poplar, Black Poplar, Lombardy Poplar, and Willow, the GOLD MEDAL, or THIRTY GUINEAS.

It is required that not leſs than half an acre be planted with each, and the plants to be not more than four feet aſunder.

It is alſo required that the plantation ſtand fourteen years, at the end of which to be all cut down and meaſured, or accurately meaſured ſtanding; the Certificates of the meaſure and value, and that the whole is properly fenced and ſecured, to be produced on or before the firſt Tueſday in January, 1796.

N. B. Any information relating to the ſtate of the plantation, if ſent to the Society between the time of planting, and claiming the premium, will be thankfully received.

74. PLANTING ORCHARDS. To the perſon who ſhall plant an Orchard after the month of Auguſt in the year 1796, in the moſt judicious manner, not leſs than four acres, the GOLD MEDAL, or FIFTY-GUINEAS.

75.

75. For the next in merit, the SILVER MEDAL, or THIRTY GUINEAS.

The proof of the value of the improvement of the Orchard ſhall depend on the clear product of the greateſt quantity of fine marketable fruit, to be produced during three ſucceſſive years after the year 1812, and ſold at any public market in England or Wales. Each perſon who propoſes to become a Candidate for theſe Premiums muſt ſend an account of the number of trees, their culture, pruning, and every circumſtance which can in the leaſt throw any light upon the ſubject; which information will be regiſtered, with a view to form a ſyſtem of rational culture.

76. And that Gentlemen may be induced to come forward and make and preſerve ſuch plantations,—The perſon who can produce an ORCHARD which, at the end of three years after planting, ſhall ſhew the greateſt promiſe of ſucceſs, ſhall be entitled to the GOLD MEDAL, or THIRTY GUINEAS.

The merits of the two firſt-mentioned Premiums being to be aſcertained by the fruit; the merit of the third Premium muſt be aſcertained by the judicious number of trees planted, the ſtraitneſs, clearneſs, and freedom of growth of the ſeveral trees; and that all the young branches run free, and at due diſtances from each other, without any galling or canker.

CERTIFICATES of the forming the Orchard, the ſoil and aſpect of the plantation, the ſale and product of the fruit for which the claims for the Premiums, Claſſes 74 and 75, are intended to be made, muſt be delivered to the Society on or before the firſt Tueſday in November, 1815; and the Certificate in claim of the Premium, Claſs 76, muſt be delivered to the Society on or before the firſt Tueſday in November, 1799.

N. B. However expert the Orchardiſt may be in general information and attention, much will depend on ſoil, expoſure, culture, and an eaſy communication to convey the fruit

fruit to market; for every field, however valuable in other reſpects, may not be proper for an Orchard.

Any wood the Orchardiſt may chooſe to raiſe for ſhelter to ſuch plantation, is not to to be meaſured as part of the Orchard, as the wood will more than ſupport its own expence.

*** *The Candidates for planting all kinds of Trees are to certify, that the reſpective Plantations are properly fenced and ſecured, and particularly to ſtate the condition the Plants were in at the time of ſigning ſuch Certificates.*

Any information which the Candidates for the foregoing Premiums may chooſe to communicate, relative to the methods made uſe of in forming the Plantation, or promoting the growth of the ſeveral Trees, or any other obſervations that may have occurred on the ſubject, will be thankfully received.

77. SE-

77. SECURING PLANTATIONS OF TIMBER-TREES. To the perſon who ſhall give to the Society the moſt ſatisfactory Account, founded on experience, of the moſt effectual and leaſt expenſive method of ſecuring young plantations of Timber-trees, from Hares and Rabbits, as well as Sheep and larger cattle, which at the ſame time ſhall be leaſt ſubject to the depredations of wood-ſtealers, the SILVER MEDAL, or TWENTY GUINEAS.

The ACCOUNTS, and CERTIFICATES of the efficacy of the method, to be produced to the Society on or before the firſt Tueſday in November, 1795.

78. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in November, 1796.

79. TREES FOR USE WHEN EXPOSED TO THE WEATHER. To the perſon who ſhall ſend the moſt ſatisfactory account and certificate, verified by experiments, to determine which of the following trees is of the greateſt utility for timber or poles, for uſe, when expoſed to the weather, *viz.*

Larch,	Aſh,
Black Poplar,	Beech,
Spaniſh Cheſnut,	Silver Fir,
Willow,	Lombardy Poplar;
Alder,	

the GOLD MEDAL.

The ACCOUNTS and CERTIFICATES to be produced on or before the ſecond Tueſday in December, 1795.

80. PREVENTING THE BLIGHT ON FRUIT-TREES. To the perſon who ſhall diſcover to the Society the beſt and moſt effectual method of preventing the Blight on Fruit-trees, ſuperior to any hitherto known or practiſed, and verified by ac-

tual and comparative experiments, the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be delivered to the Society on or before the ſecond Tueſday in November, 1796.

80.* The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1797.

81. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1798.

N. B. It is expected that the abovementioned comparative experiments have been made during three ſucceſſive ſeaſons, and in the ſame aſpect and ſoil; and that, contiguous to them, other trees of the ſame kind

kind with thoſe for which the claim is made, have ſuffered in conſequence of the method not having been made uſe of to them.

82. COMPARATIVE CULTURE OF WHEAT. For the beſt ſet of experiments, made on not leſs than eight acres, four of which to be ſown broad-caſt, and four drilled, to aſcertain whether it is moſt advantageous to cultivate wheat by ſowing it in the common broad-caſt way, or by drilling it in equidiſtant rows, hoeing the intervals; the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS.

It is required that an account of the expence attending each mode of culture, with proper CERTIFICATES of the nature and condition of the land on which the experiments are made, together with an account of the produce of the Corn, be produced to the Society on or before the firſt Tueſday in February, 1796.

83.

83. The ſame premium is extended one year further.

The ACCOUNTS, with CERTIFICATES, to be produced to the Society on or before the firſt Tueſday in February, 1797.

84. COMPARATIVE CULTURE OF WHEAT. For the beſt ſet of experiments, made on not leſs than eight acres of land, four of which to be ſown broad-caſt, and four dibbled, to aſcertain whether it is moſt advantageous to cultivate Wheat by ſowing it in the common broad-caſt way, or by dibbling in it in equidiſtant rows, hoeing the intervals; the GOLD MEDAL, or the SILVER MEDAL and THIRTY GUINEAS.

It is required that an account of the expence attending each mode of culture, with proper Certificates of the nature and condition of the land on which the experiments are made, together with an account of the produce of the Corn, be produced to the Society on or before the firſt Tueſday in February, 1796.

85. BEANS AND WHEAT. To the perſon who ſhall have planted or drilled. between the firſt of December, 1793, and the firſt of April, 1794, the greateſt quantity of land, not leſs than ten acres, with Beans, and ſhall have ſown the ſame land with Wheat in the ſame year, 1794; TWENTY GUINEAS.

It is required that an account of the ſort and quantity of Beans, the time of planting or drilling, and of reaping or mowing them, the produce per acre threſhed, the application of the ſtraw, the expence of planting or drilling, hand or horſe hoeing, the diſtance of the rows, and the quality of the ſoil, together with CERTIFICATES of the number of acres, and that the land was actually ſown with Wheat in the year 1794, be produced on or before the firſt Tueſday in November, 1795.

N. B. The Society have been informed, that Beans may be drilled or planted ſo early as the month of December, from whence may be derived the advantage of an early

harveſt; in which caſe the ſtraw will be far more valuable than that from a later planting or drilling.

86. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the firſt Tueſday in November, 1796.

87. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the firſt Tueſday in November, 1797.

88. DRILL HUSBANDRY. To the perſon who, in the year 1795, ſhall have cultivated the greateſt quantity of land, not leſs than four hundred acres, under the Drill ſyſtem, the Wheat ſown in the autumn of the year 1794 included, the GOLD MEDAL. 5

An

An Account of the quality of the ſoil, the various crops, and of the times of drilling and hoeing, with CERTIFICATES of the quantity of land, and the general appearance of the crop, to be delivered on or before the third Tueſday in February, 1796.

89. TURNEPS. For the beſt account of experiments made on at leaſt ſix acres of land, to determine the comparative advantage of the drill or broad-caſt method in the cultivation of Turneps; the GOLD MEDAL, or the SILVER MEDAL and TEN GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be delivered on or before the third Tueſday in April, 1796.

It is required that one half of the land be drilled, and the other half ſown broad-caſt.

90. VEGETABLE FOOD. For the beſt account, confirmed by experiments,

of the Vegetable Food (Cabbages and Turneps excepted), growing in the months of March and April, that will moſt increaſe the milk in Mares, Cows, and Ewes, at that ſeaſon; provided ſuch food can be cultivated at an expence that will admit of its being applied to the above purpoſes; the GOLD MEDAL, or the SILVER MEDAL and TEN GUINEAS.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1795.

91. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1796.

92. TURNEP-ROOTED CABBAGE. For having raiſed, and duly cultivated, Turnep-rooted Cabbage, in the year 1794, for the feeding Cattle or Sheep, on the greateſt number of acres, not leſs than ten, and

giving an account of the ſoil, culture, expence, time and manner of feeding off, produce, and the effects on Cattle or Sheep fed with it; the GOLD MEDAL, or THIRTY GUINEAS.

93. For the next greateſt number of acres, not leſs than five, the SILVER MEDAL and TEN GUINEAS.

CERTIFICATES of the quantity of land, with the accounts, to be produced on or before the laſt Tueſday in October, 1795.

94, 95. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in October, 1796.

96. COMPARATIVE CULTURE OF POTATOES. To the perſon who ſhall produce to the Society, the moſt ſatisfactory account, verified by experiments, of

the comparative advantages of planting whole Potatoes, and hilling them up as they grow, and of the common method of planting Potatoes, by cuttings, on not leſs than one acre of land; the SILVER MEDAL, or TEN GUINEAS.

CERTIFICATES of the culture, expence, and produce, to be delivered to the Society on or before the third Tueſday in December, 1796.

97. INCREASED CULTURE OF POTATOES. To the perſon who ſhall, in the year 1795, cultivate the greateſt quantity of land, not leſs than twenty acres, with Potatoes, ſuch land not having been planted with Potatoes within the laſt ten years; the GOLD MEDAL, or FIFTY GUINEAS.

98. For the next greateſt quantity, not leſs than ten acres, the SILVER MEDAL, or TWENTY-FIVE GUINEAS.

CERTIFICATES of the quantity and nature of the ſoil, with full accounts of the method of culture, to be prodnced on or before the third Tueſday in January, 1796.

99. POTATOES FOR FEEDING CATTLE AND SHEEP. To the perſon who, in the year 1794, ſhall have cultivated the greateſt quantity of land, not leſs than four acres, with Potatoes, for the purpoſe of feeding Cattle and Sheep; the GOLD MEDAL, or THIRTY GUINEAS.

CERTIFICATES, with ſatisfactory Accounts of the expence and manner of cultivating the Potatoes, and the application of them to the above purpoſes only, and the ſucceſs that has attended the uſe of them, to be delivered to the Society on or before the ſecond Tueſday in November, 1795.

100. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1796.

101. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1797.

N. B. Should any Gentleman have already cultivated Potatoes for the purpoſes mentioned in the above advertiſement, any information from him on the ſubject will be thankfully received by the Society.

102. CULTIVATING ROOTS AND HERBAGE FOR FEEDING SHEEP, AND BLACK CATTLE. For the moſt ſatisfactory experiments, made between Michaelmas, 1794, and the firſt of May, 1795, in order to aſcertain which of the following plants can be cultivated and houſed, or otherwiſe ſecured for winter-fodder, to the greateſt advantage, *viz.*

Turnep-

Turnep-rooted Cabbage, Carrots,
Turnep Cabbage, Parſneps,
Turneps, Potatoes;

the GOLD MEDAL.

The ACCOUNTS, with proper Certificates, to be produced on or before the firſt Tueſday in November, 1795.

It is required that the above roots be taken off the land by the laſt day of October, 1794; that a crop of Wheat may be ſown in the ſame ground, and the particulars of the ſowing and planting, taking up, produce, preſerving, and application to the feeding Sheep and Black Cattle, be ſpecified. The comparative experiments muſt be made between two or more of any of the above-mentioned plants, and not leſs than one acre be cultivated with each particular kind of plant.

N. B. Great advantage will ariſe to the Farmer occupying land in the neighbourhood of extenſive commons, from the conveniency of keeping large flocks of Sheep,

and herds of Cattle, if the difficulty of ſupporting them through the winter was obviated by a due knowledge of this practice.

103. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1796.

104. STALL-FEEDING HORSES WITH GREEN VEGETABLES. To the perſon who ſhall keep the greateſt number of Horſes, not fewer than four, in the Stall or Stable, during the greateſt number of months in the year, on Carrots, Potatoes, Lucern, Saintfoin, Clover, Vetches, or any other green vegetable food raiſed on land in his own poſſeſſion; the SILVER MEDAL and TEN GUINEAS.

It is required that the number of horſes ſo fed, the quantity of land employed in raiſing the green vegetable food, the quantity

tity of hay and corn (if any) conſumed, the ſtate and condition of the horſes, an account of the work done by them, and of the quantity of dung obtained, as near as can be aſcertained, be fully and particularly ſpecified.

The ACCOUNTS and CERTIFICATES to be produced to the Society on or before the ſecond Tueſday in February, 1796.

105. MAKING HAY IN WET WEATHER. To the perſon who ſhall diſcover to the Society the beſt and cheapeſt method, ſuperior to any hitherto practiſed, of making Hay in wet weather, the GOLD MEDAL, or THIRTY GUINEAS.

A full Account of the method employed, and of the expence attending the proceſs, with not leſs than fifty-ſix pounds of the hay; and Certificates that at leaſt the produce of fifteen acres of land has been made according to the method deſcribed, and that the whole is of equal quality with the ſamples;

ſamples; to be produced to the Society on or before the firſt Tueſday in January, 1796.

106. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1797.

107. CULTIVATING THE TRUE RHUBARB. For having raiſed, before the end of the year 1795, the greateſt number of plants, not leſs than ſix hundred, of Rheum Palmatum, or true Rhubarb, the GOLD MEDAL.

108. For the next greateſt number, not leſs than four hundred plants, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they ſtand at leaſt four feet aſunder, that they have been in a thriving ſtate during the preceding ſummer, with an account of

of the ſoil, culture, and aſpect, to be produced on before the ſecond Tueſday in February, 1796.

109, 110. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in February, 1797.

111. RHUBARB. For the greateſt quantity of Rhubarb, of Britiſh growth, not leſs than twenty pounds weight, equal to ſuch as is commonly ſold in the ſhops under the name of Turkey or Ruſſia Rhubarb; five pounds of which, as a ſample, with CERTIFICATES that the remainder is of equal goodneſs, and a particular Account of the manner of culture and cure, to be produced on or before the firſt Tueſday in November, 1795; the GOLD MEDAL.

112. For the next greateſt quantity, not leſs than ten pounds weight, the SILVER MEDAL.

113.

113, 114. The ſame premiums are extended one year further.

The SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in November, 1796.

115. ASCERTAINING THE COMPONENT PARTS OF ARABLE LAND. To the perſon who ſhall produce to the Society the moſt ſatisfactory ſet of experiments, to aſcertain the due proportion of the ſeveral component parts of Arable Land, in one or more counties in Great Britain, by an accurate analyſis of it; and who, having made a like analyſis of ſome poor land, ſhall, by comparing the component parts of each, and thereby aſcertaining the deficiencies in the poor ſoil, improve a quantity of it, not leſs than one acre, by the addition of ſuch parts as the former experiments ſhall have diſcovered to be wanting therein, and therefore probably the cauſe of its ſterility; the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the manurings, ploughings, and crops of the improved land, be the ſame after the improvement as before; and that a minute account of the produce in each ſtate, of the weather, and of the various influencing circumſtances, together with the method made uſe of in analyſing the ſoils, be produced, with proper CERTIFICATES, and the chemical reſults of the analyſis, which are to remain the property of the Society, on or before the laſt Tueſday in November, 1795.

It is expected that a quantity, not leſs than ſix pounds, of the rich, of the poor, and of the improved ſoils, be produced with the Certificates.

N. B. Among the methods or proceſſes made uſe of by Chemiſts, and called DRY or MOIST, the latter only appears adapted to the aſcertaining the reſpective proportions of the component parts of Arable earth.—Dr. Shaw, in his Chemical Lectures; Dr. Home, in his Principles of Agriculture; Dr. George Fordyce, in his

Ele-

Elements of Agriculture; and Sir Torbern Bergmen, in his "Diſſertation ſur les Terres Géoponiques;" have treated of theſe ſubjects.

116. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the laſt Tueſday in November, 1796.

117. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the laſt Tueſday in November, 1797.

118. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the laſt Tueſday in November, 1798.

119.

119. DRAINING LAND. To the perſon who, in the year 1795, ſhall have made the greateſt number of yards, not fewer than one thouſand, of Hollow Drain, of brick, ſtone, or ſuch like durable materials, with a clear paſſage for the water, of not leſs than ſix inches wide, for the improvement of land injured by water ariſing from internal ſprings; the GOLD MEDAL, or THIRTY GUINEAS.

Particular accounts of the nature, quality, ſpontaneous produce, and yearly value of the Land before draining, and the ſuppoſed value afterwards; the nature and texture of the under-ſtrata whence the ſprings ariſe; the depth and width of the drains; the quantity of ſuppoſed water diſcharged; the expence of labour and materials per yard, in length, when finiſhed; a ſketch or plan of all the drains, and their ſeveral inclinations and diſtances from each other; with CERTIFICATES of the number of acres drained, and that the land was actually wet and ſpringy before draining,

ing, but dry and firm afterwards; to be produced to the Society on or before the the third Tueſday in February, 1796.

120. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to to be produced on or before the third Tueſday in February, 1797.

121. IMPROVING LAND LYING WASTE. For the beſt Account of a method of improving any of the following ſoils, being land lying waſte or uncultivated, *viz.* Clay, Gravel, Sand, Chalk, Moor or Peat-earth, and Bog; verified by experiments on not leſs than fifty acres of land; the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS, for each.

122. For the next greateſt quantity of land, not leſs than twenty-five acres, the SILVER MEDAL and TEN GUINEAS.

To

To be produced, with proper CERTIFICATES, on or before the ſecond Tueſday in December, 1795.

The ſoil, manner of improvement, expence, and product, are required to be fully explained.

123, 124. The premiums are extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1796.

125, 126. The ſame premiums are extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1797.

127. MANURES. For the moſt ſatisfactory ſet of experiments, to aſcertain the comparative advantages of the following Manures, uſed as Top-dreſſings, on Graſs or Corn Land, viz. Soot, Coal-Aſhes, Wood-Aſhes, Lime, Gypſum, Night-ſoil; the GOLD-MEDAL, or the SILVER MEDAL and TWENTY GUINEAS,

It is required that the above experiments be made between two or more of the above-mentioned Manures, and that not leſs than two acres of land be dreſſed with each Manure. An account of the nature of the ſoil, quantity and expence of the Manure, and crops, with CERTIFICATES, to be produced on or before the laſt Tueſday in February, 1796.

128. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the laſt Tueſday in February, 1797.

129. IMPROVING WASTE MOORS. For the improvement of the greateſt number of acres of Waſte Moor-Land, not leſs than one hundred, the GOLD MEDAL.

It is required that the land before improvement be abſolutely uncultivated, and in a great meaſure uſeleſs; that in its improved ſtate it be incloſed, cultivated, and divided into fields, ſufficient for the uſe and occupation of a tenant. CERTI-

CERTIFICATES of the number of acres, of the quality of the Moor ſo improved, of the mode and expence of the improvement, the ſtate it is in as to the proportion of graſs to arable, and the average value thereof, to be produced on or before the firſt Tueſday in February, 1796.

130. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1797.

131. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1798.

132. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1799.

133. GAINING LAND FROM THE SEA. To the perſon who ſhall produce to the Society an account of the beſt method, verified by actual experiment, of gaining Land from the Sea, not leſs than twenty acres, on the coaſt of England or Wales; the GOLD MEDAL.

CERTIFICATES of the quantity of Land, and that the experiments were begun after the firſt of January, 1790, to be produced to the Society on or before the firſt Tueſday in October, 1795.

N. B. The Society have been credibly informed, that land has been gained on the coaſt of Holland, by fixing rows of whiſps of ſtraw upright in the ſand, at about a foot diſtant from each other, or by fixing ſtakes at proper diſtances from each other, and wattling ſtraw-bands between them.

134. The ſame premium is extended one year further.

CERTI-

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1796.

135. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1797.

136. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1798.

137. MACHINE FOR DIBBLING WHEAT. To the perſon who ſhall invent the beſt Machine, to anſwer the purpoſe of Dibbling Wheat, by which the holes for receiving the grain may be made at equal diſtances and proper depths, the grain regularly delivered therein, and effectually covered; the SILVER MEDAL, or TWENTY GUINEAS.

The MACHINE, with CERTIFICATES that at leaſt three acres have been dibbled

by it, to be produced to the Society on or before the ſecond Tueſday in January, 1796. Simplicity and cheapneſs in the conſtruction will be conſidered as principal parts of its merit.

138. MACHINE TO ANSWER THE PURPOSE OF REAPING OR MOWING CORN. For inventing a Machine to anſwer the purpoſe of mowing or reaping Wheat, Rye, Barley, Oats, or Beans, by which it may be done more expeditiouſly and cheaper than by any method now practiſed, provided it does not ſhed the corn or pulſe more than the methods in common practice, and that it lays the ſtraw in ſuch a manner as that it may be eaſily gathered up for binding; the SILVER MEDAL, or TEN GUINEAS.

The MACHINE, with CERTIFICATES that at leaſt three acres have been cut by it, to be produced to the Society on or before the ſecond Tueſday in December, 1795. Simplicity and cheapneſs in the conſtruction

ſtruction will be conſidered as principal parts of its merit.

139. IMPROVED HOE. To the perſon who ſhall produce to the Society the moſt improved or beſt-conſtructed Horſe or Hand Hoe, ſuperior to any hitherto in uſe, for the purpoſe of clearing from weeds, and looſening the ſoil in the intermediate ſpaces of all crops of corn ſown in equidiſtant rows, and which ſhall earth up the young plants at the ſame time; the GOLD MEDAL, or TWENTY GUINEAS.

A HOE, with CERTIFICATES of its having been ſucceſsfully uſed, to be produced to the Society on or before the firſt Tueſday in December, 1795.

139*. The ſame premium is extended one year further.

The HOE, with CERTIFICATES, to be produced on or before the firſt Tueſday in December, 1796.

140. DESTROYING THE GRUB OF THE COCKCHAFER. To the perſon who ſhall diſcover to the Society an effectual method, verified by repeated and ſatisfactory trials, of deſtroying the Grub of the Cockchafer, or of preventing or checking the deſtructive effects which always attend Corn, Peas, Beans, and Turneps, when attacked by thoſe inſects; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be produced or before the firſt Tueſday in January, 1796.

141. DESTROYING THE WIRE-WORM. To the perſon who ſhall diſcover to the Society, an effectual method, verified by repeated and ſatisfactory trials, of deſtroying the inſect called the Wire-worm, or of preventing or checking the deſtructive effects which always attend Corn, Beans, Peas, or Pulſe, when attacked by thoſe inſects; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be produced to the Society on or before the firſt Tueſday in January, 1796.

142. DESTROYING THE FLY ON HOPS, AND CATERPILLARS ON FRUIT-TREES AND CULINARY PLANTS. To the perſon who ſhall diſcover to the Society an eaſy and efficacious method of deſtroying the Fly on Hops, and Caterpillars on Fruit-trees and culinary Plants, ſuperior to any hitherto known or practiſed, the GOLD MEDAL or THIRTY GUINEAS.

ACCOUNTS, and CERTIFICATES that the method has been effectually practiſed on not leſs than ſix acres of Hop-ground, or an Orchard or Garden of not leſs than two acres, to be delivered to the Society on or before the firſt Tueſday in February, 1796.

143. CURE OF THE ROT IN SHEEP. To the perſon who ſhall diſcover to the Society the beſt and moſt effectual

fectual method of preventing or curing the diſeaſe called the Rot in Sheep, verified by repeated and ſatisfactory experiments, the GOLD MEDAL, or THIRTY GUINEAS.

It is expected that the Candidates furniſh accurate accounts of the nature, ſymptoms, and cure of the diſeaſe, together with the imputed cauſe thereof, and the actual or probable means of prevention, which, with proper CERTIFICATES, muſt be delivered to the Society on or before the firſt Tueſday in February, 1796.

144. PREVENTING AND CURING THE ILL EFFECTS OF THE FLY ON SHEEP. To the perſon who ſhall diſcover to the Society the moſt effectual method of preventing and curing the ill effects of the Fly on Sheep, the SILVER MEDAL, or THIRTY GUINEAS.

It is required that the method be aſcertained by repeated experiments, and that a CERTIFICATE of its efficacy be delivered

to

to the Society on or before the firſt Tueſday in December, 1795.

145. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in December, 1796.

Pre-

Premiums for Diſcoveries and Improvements in Chemiſtry, Dying, and Mineralogy.

146. BARILLA. For the greateſt quantity of Merchantable Barilla, not leſs than half a ton, made from Spaniſh Kali, or any other plant raiſed in Great Britain, the GOLD MEDAL, or THIRTY GUINEAS.

A ſample of not leſs than twenty-eight pounds, with a CERTIFICATE that half a ton has been made, to be produced on or before the firſt Tueſday in January, 1796.

147. PRESERVING SEEDS OF VEGETABLES. For the beſt method of preſerving the ſeeds of Plants in a ſtate fit for vegetation a longer time than has hitherto been practiſed, ſuch method being ſuperior to any known to the public, and verified by ſufficient trial; to be communicated to the Society on or before the firſt Tueſ-

Tueſday in December, 1795; the GOLD MEDAL, or THIRTY GUINEAS.

148. The ſame premium is extended one year further; the ACCOUNTS to be produced on or before the firſt Tueſday in December, 1796.

149. METHOD OF SEPARATING THE SACCHARINE SUBSTANCE OF TREACLE IN A SOLID FORM. To the perſon who ſhall diſcover to the Society the beſt method of ſeparating the Saccharine Subſtance of Treacle in a ſolid form, at ſuch an expence as will render it advantageous to the public, the GOLD MEDAL, or FIFTY GUINEAS.

A quantity of the Saccharine Subſtance, ſo ſeparated, in a ſolid form, not leſs than thirty pounds weight, with an account of the proceſs, and CERTIFICATES that not leſs than one hundred weight has been prepared, to be produced to the Society on or before the firſt Tueſday in February, 1796.

150. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in February, 1797.

151. PRESERVING FRESH-WATER SWEET. To the perſon who ſhall produce to the Society the beſt account, verified by ſatisfactory trials, of an efficacious method of preſerving Freſh-water ſweet during long voyages, the GOLD MEDAL, or FIFTY GUINEAS.

ACCOUNTS, and full deſcriptions of the methods made uſe of, in order that it may be known that nothing injurious enters therein, to be produced to the Society, with at leaſt thirty gallons of Water ſo preſerved, and proper CERTIFICATES, on or before the laſt Tueſday in December, 1795.

152. The ſame premium is extended one year further.

The

The ACCOUNTS and CERTIFICATES to be produced on or before the laſt Tueſday in December, 1796.

153. DESTROYING SMOKE. For the beſt account, aſcertained by proper experiments, of a method of deſtroying or burning the Smoke of fires belonging to Steam-Engines, Furnaces employed in calcining or ſmelting Metals, or other large works, in order to prevent annoyance to the neighbourhood; to be produced on before the firſt Tueſday in January, 1796; the GOLD MEDAL, or THIRTY GUINEAS.

154. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the firſt Tueſday in January, 1797.

155. CONDENSING SMOKE. To the perſon who ſhall invent the beſt method by which the Smoke of Steam-Engines,

gines, Brewhouſes, Sugar-houſes, or Furnaces, may be advantageouſly condenſed and collected in the form of Tar, or ſome other uſeful material; the GOLD MEDAL, or FIFTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES of the method having been ſucceſsfully employed, and ſpecimens of the materials produced, to be delivered to the Society on or before the firſt Tueſday in December, 1795.

156. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in December, 1796.

157. CANDLES FROM RESIN. To the perſon who ſhall diſcover to the Society the beſt method of ſo reducing the inflammable quality of Reſin, as to adapt it to the purpoſes of making Candles fit for common uſe, at a price much inferior

rior to that of Candles made of Tallow only; the GOLD MEDAL, or THIRTY GUINEAS.

Six pounds at leaſt of the Candles ſo prepared, with an ACCOUNT of the proceſs, to be delivered to the Society on or before the firſt Tueſday in December, 1795.

158. REFINING WHALE OR SEAL OIL. For diſcloſing to the Society an effectual method of purifying Whale or Seal Oil from the glutinous matter that encruſts the wicks of lamps, and extinguiſhes the light, though fully ſupplied with oil; the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the whole of the proceſs be fully and fairly diſcloſed, in order that ſatisfactory experiments may be made by the Society, to determine the validity of the claim; and CERTIFICATES that not leſs than twenty gallons have been purified according to the proceſs delivered in, together with two gallons of the oil

in its unpurified ſtate, and two gallons ſo refined, be produced to the Society on or before the ſecond Tueſday in February, 1796.

159. The ſame premium is extended one year further.

CERTIFICATES and SAMPLES to be produced on before the ſecond Tueſday in February, 1797.

160. CLEARING FEATHERS FROM THEIR ANIMAL OIL. To the perſon who ſhall diſcover to the Society the beſt and moſt expeditious method, ſuperior to any hitherto practiſed, of clearing Feathers from their offenſive Animal Oil, for the uſe of upholders in making beds, cuſhions, &c. the GOLD MEDAL, or FORTY GUINEAS.

A quantity of Feathers ſo cleared, not leſs than twenty pounds weight, with a full account of the proceſs, to be produced to the Society on or before the firſt Tueſday in February, 1796.

161. SUBSTITUTE FOR, OR PREPARATION OF, YEAST. For diſcovering to the Society an effectual Subſtitute for Yeaſt, or preparation of Yeaſt, which, after being kept ſix months, ſhall be fit for fermenting liquors, and raiſing bread; the GOLD MEDAL, or THIRTY GUINEAS.

Specimens of the Subſtitute, or of the Preparation of Yeaſt, ſufficient for trials, together with a paper ſealed up, and containing an account of the compoſition of the Subſtitute, or method of preparing the Yeaſt, to be produced on or before the laſt Tueſday in November, 1795.

162. PRESERVING SALTED PROVISIONS FROM BECOMING RANCID OR RUSTY. To the perſon who ſhall diſcover to the Society the beſt, cheapeſt, and moſt efficacious method of preſerving Salted Proviſions from growing rancid or ruſty; the GOLD MEDAL, or THIRTY GUINEAS.

A full deſcription of the method, with proper CERTIFICATES that it has been found, on repeated trials, to anſwer the purpoſe intended, to be produced to the Society on or before the firſt Tueſday in February, 1796.

163. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in February, 1797.

164. INCREASING STEAM. To the perſon who ſhall diſcover to the Society a method, verified by actual experiments, of increaſing the quantity or the force of Steam, in Steam-Engines, with leſs fuel than is uſually employed, provided that in general the whole amount of the expences in uſing Steam-Engines may be conſiderably leſſened; the GOLD MEDAL, or THIRTY GUINEAS.

To

To be communicated to the Society on or before the firſt Tueſday in January, 1796.

N. B. As it is well known there are methods of preventing the ebullition of liquids by the addition of particular matters in the boiling, it is ſubmitted to the conſideration of the ingenious, whether, by the addition of ſome matters, or by ſome mechanical operations, the boiling and evaporation may not be increaſed.

165. PREVENTING THE DRY-ROT IN TIMBER. To the perſon who ſhall diſcover to the Society the cauſe of the Dry-Rot in Timber, and diſcloſe a certain method of prevention, ſuperior to any hitherto known, the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS of the cauſe, and method of prevention, confirmed by repeated experiments, to be produced to the Society on or before the ſecond Tueſday in December, 1795.

166. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1796.

167. FINE BAR-IRON. To the perſon, in England or Wales, who ſhall make the greateſt quantity of Bar-Iron, not leſs than ten tons, with Coak, from Coak Pigs, equal in quality to the beſt Iron imported from Sweden or Ruſſia, and as fit for converting into Steel; the GOLD MEDAL.

SAMPLES, not leſs than one hundred weight, with CERTIFICATES that the whole quantity is of equal quality, to be produced to the Society on or before the firſt Tueſday in January, 1796.

168. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be delivered on or before the firſt Tueſday in January, 1797. 169.

169. METHOD OF PREPARING WHITE LEAD, WHICH SHALL NOT BE PREJUDICIAL. To the perſon who ſhall diſcover to the Society a method of preparing White Lead, in a manner that ſhall not be prejudicial to the health of the workmen employed either in making or uſing it, and will anſwer all the purpoſes for which White Lead is at preſent uſed; the GOLD MEDAL, or FIFTY GUINEAS.

A quantity of the White Lead ſo prepared, with an account of the proceſs made uſe of, and CERTIFICATES that not leſs than one ton has been manufactured in the ſame manner, to be produced to the Society on or before the ſecond Tueſday in February, 1796.

170. SUBSTITUTE FOR THE BASIS OF PAINT. To the perſon who ſhall produce to the Society the beſt Subſtitute, ſuperior to any hitherto known, for the Baſis of Paint, equally proper for the purpoſe as the White Lead now employed;

ſuch ſubſtitute not to be of a noxious quality, and which may be afforded at a price not materially higher than that of White Lead; the GOLD MEDAL, or THIRTY GUINEAS.

A quantity of the Subſtitute, not leſs than fifty pounds weight, with an ACCOUNT of the proceſs uſed in preparing it, and CERTIFICATES that at leaſt five hundred weight has been manufactured, to be produced to the Society on or before the ſecond Tueſday in November, 1795.

171. The ſame premium is extended one year further.

CERTIFICATES and ACCOUNTS to be produced on or before the ſecond Tueſday in November, 1796.

172. REFINING BLOCK TIN. To the perſon who ſhall diſcover to the Society the beſt method of purifying or refining *Block Tin*, in ſuch manner as to render it fit for the finer purpoſes to which *Grain*

Tin is now ſolely applied, and at an expence that ſhall not render it higher in price than *Grain Tin*; the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES that not leſs than three tons have been refined or purified, with a full detail of the proceſs, and a quantity, not leſs than one hundred weight, of the Tin ſo refined, to be produced to the Society on or before the firſt Tueſday in November, 1795.

173. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1796.

174. GLAZING EARTHEN WARE WITHOUT LEAD. To the perſon who ſhall diſcover to the Society the cheapeſt, ſafeſt, moſt durable, and moſt eaſily fuſible Compoſition, fit for the purpoſe of glazing the ordinary kinds of Earthen

Earthen Ware, without any preparation of Lead, and preferable to any hitherto in uſe; the GOLD MEDAL, or THIRTY GUINEAS.

SPECIMENS of the Ware ſo glazed, with proper CERTIFICATES of its having ſucceeded, and a SAMPLE of the materials made uſe of, to be produced to the Society on or before the firſt Tueſday in February, 1796.

175. PURIFYING BRACKISH WATER. To the perſon who ſhall diſcover to the Society the beſt and cheapeſt method, verified by actual experiment, of Purifying or Reducing Brackiſh Water, which frequently ariſes from New Wells, made in particular places, to a natural ſweetneſs, fit for the uſe of families and for the purpoſe of cattle; the SILVER MEDAL, and FIFTEEN GUINEAS.

Satisfactory CERTIFICATES that ſuch Brackiſh Water has been rendered perfectly ſweet, and uſed by the family to which ſuch Well

Well may belong at leaſt three months afterwards, with an account of the method made uſe of in purifying the ſame, to be delivered to the Society on or before the ſecond Tueſday in February, 1796.

Premiums

Premiums for promoting the Polite Arts.

176. HONORARY PREMIUMS FOR DRAWINGS. For the beſt Drawing of any kind, made with Water-Colours, Crayons, Chalk, Black Lead, Pen, Indian Ink, or Biſter, by young Gentlemen under the age of twenty-one, ſons or grandſons of Peers, or Peereſſes in their own right, of Great Britain or Ireland, to be produced on or before the firſt Tueſday in March, 1796; the HONORARY MEDAL of the Society IN GOLD.

177. The ſame IN SILVER for the next in merit.

178, 179. The ſame premiums will be given, on the like conditions, to young Ladies, daughters or grand-daughters of Peers, or Peereſſes in their own right, of Great-Britain or Ireland.

180.

180. HONORARY PREMIUMS FOR DRAWINGS. For the beſt Drawing of any kind, made with Water-colours, Crayons, Chalk, Black Lead, Pen, Indian Ink, or Biſter, by young Gentlemen under the age of twenty-one; to be produced on or before the firſt Tueſday in March, 1796; the GOLD MEDAL.

181. For the next in merit, the SILVER MEDAL.

182, 183. The ſame premiums will be given for Drawings by young Ladies.

N. B. As the foregoing Honorary Premiums are intended only for ſuch of the Nobility and Gentry as may hereafter become patrons or patroneſſes of the Arts; perſons profeſſing any branch of the Polite Arts, or any buſineſs dependent on the Arts of Deſign, or the ſons or daughters of ſuch perſons, will not be admitted Candidates in theſe Claſſes.

The

The two following Premiums (Claſſes 184 *and* 185*) are offered in conformity to the Will of the late John Stock, of Hampſtead, Eſq.*

184. DRAWING. For the beſt Drawing in perſpective of the Water-gate at York-buildings, not leſs than eighteen inches high, to be produced on or before the third Tueſday in February, 1796, a SILVER MEDALLION, with the following engraved inſcription: *The Premium given by the Society for the Encouragement of Arts, Manufactures, and Commerce, in conformity to the Will of John Stock, of Hampſtead, Eſq.* The Drawing to be left with the Society as their property.

185. PORTRAIT. For the beſt Copy, in Oil-Colours, of a Portrait of the late JOHN STOCK, of Hampſtead, Eſq. to be produced on or before the third Tueſday in February, 1796, a SILVER MEDALLION, with

with the following engraved inſcription: *The Premium given by the Society for the Encouragement of Arts, Manufactures, and Commerce, in conformity to the Will of John Stock, of Hampſtead, Eſq.*

186. DRAWINGS OF OUTLINES. For the beſt Outline, after an original group or caſt, in plaſter, of Human Figures, by perſons of either ſex, under the age of ſixteen, the principal figure not leſs than twelve inches; to be produced on or before the third Tueſday in February, 1796; the greater SILVER PALLET.

187. For the next in merit, the leſſer SILVER PALLET.

N. B. Theſe drawings are to be made on Paper, with Chalk, Black Lead, Indian Ink, or Biſter; and the original either to be produced to the Society, or to be referred to for their examination.

188.

188. DRAWINGS OF MACHINES. For the beſt Perſpective Drawing, by perſons of either ſex under the age of twenty-one years, of Mr. Fulton's Machine for Sawing Marble, Stone, &c. in the Society's Repoſitory, the greater SILVER PALLET; to be produced on or before the third Tueſday in February, 1796.

N. B. Such Candidates as propoſe to make Drawings for this Premium, will be admitted by the Regiſter any day (Sundays and Wedneſdays excepted), between the hours of ten and two.

The Drawing to which the premium is adjudged, is to remain the property of the Society.

189. DRAWINGS OF LANDSCAPES. For the beſt Drawing of a Landſcape after nature, by perſons of either ſex under twenty-one years of age, to be produced on or before the third Tueſday in February, 1796, the greater SILVER PALLET.

190. For the next in merit, the leſſer SILVER PALLET.

Each Candidate muſt mention on the front of the Drawing, from whence the View was taken; and the Drawings muſt be made with Chalk, Pen, Indian Ink, Water-Colours, or Biſter.

191. HISTORICAL DRAWINGS. For the beſt Hiſtorical Drawing, being an original compoſition, of five or more Human Figures; the height of the principal figure not leſs than eight inches; to be made with Crayons, Chalk, Black Lead, Pen, Indian Ink, Water-colours, or Biſter, and to be produced on or before the third Tueſday in February, 1796; the GOLD PALLET.

192. For the next in merit, the greater SILVER PALLET.

193. SURVEYS OF COUNTIES. To the perſon who, in the year 1795, ſhall complete and publiſh an accurate Survey of

any one County in England or Wales, on a ſcale of not leſs than one inch to a mile, for which rewards have not already been given by the Society; the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES of the accuracy of the Survey, and that it was begun after the firſt of June, 1791, together with the Map, to be produced on or before the laſt Tueſday in January, 1796.

The Map to which the premium ſhall be adjudged, to remain the property of the Society.

N. B. The Society are already in poſſeſſion of Surveys of the following Counties, viz. Bedford, Cornwall, Devonſhire, Derbyſhire, Durham, Somerſetſhire, Northumberland, Suffolk, Leiceſterſhire, Cumberland, Lancaſhire, Dorſetſhire, Hampſhire, Glouceſterſhire, Herefordſhire, Hertfordſhire, Huntingdonſhire, Northamptonſhire, Nottinghamſhire, Weſtmorland, and Worceſterſhire.

194.

194. The ſame premium is extended one year further.

The Survey to be begun after the firſt of June, 1792; and the Map to be produced on or before the laſt Tueſday in January, 1797.

195. The ſame premium is extended one year further.

The Survey to be begun after the firſt of June, 1793; and the Map to be produced on or before the laſt Tueſday in January, 1798.

196. The ſame premium is extended year further.

The Survey to be begun after the firſt of June, 1794; and the Map to be produced on or before the laſt Tueſday in January, 1799.

197. NATURAL HISTORY. To the Author who ſhall publiſh, in the year 1795, the Natural-Hiſtory of any County of England or Wales, the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the ſeveral natural productions, whether animal, vegetable, or mineral, peculiar to the county, or found therein, be carefully and ſpecifically arranged and deſcribed, in order that the Public may be enabled to judge what Arts or Manufactures are moſt likely to ſucceed in ſuch County.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1796.

198. The ſame premium is extended one year further.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1797.

199. The ſame premium is extended one year further.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1798.

CON-

CONDITIONS.

No perſon who has gained the firſt premium in any Claſs, will be admitted a Candidate in a Claſs of an inferior age; and no Candidate ſhall receive more than one Premium in one year; nor will they who for two ſucceſſive years ſhall gain the firſt Premium in one Claſs, be ever again admitted as candidates in that Claſs.

No perſon ſhall ever be admitted a Candidate in any Claſs, in which he has three times obtained the whole of the firſt Premium.

No Candidate ſhall ſend in more than one Performance in any one Claſs.

All the Claims which are produced each year before the Committee of Polite Arts, (to which Premiums or Bounties are adjudged) are to remain with the Society ſix weeks after the determination, unleſs the Candidates, for particular reaſons, do apply to have their performances returned.

No Claim for a Premium in the Polite Arts will be admitted, that has obtained,

or has been produced in order to obtain, a Premium, Reward, or Gratification, from any other Society, or any Academy or School.

All Performances that obtain Premiums in the Polite Arts, muſt be begun after the publication of ſuch Premiums.

Purpoſely to encourage real merit, and to prevent any attempts to impoſe on the Society, by producing Drawings which ſhall have been made or retouched by any other perſon than the Candidate, the Society is reſolved, upon all occaſions, with reſpect to the ſucceſsful Candidates in Claſſes 186 to 192 incluſive, to prove their abilities, by requiring a ſpecimen made under the inſpection of the Committee of Polite Arts, in every inſtance where ſuch proof can be obtained.

It is required that all Candidates in the Polite Arts do ſignify, on their Drawings, their age; and whether the performances are originals, or copies; and, if copies, whence they were taken.

Premiums for encouraging and improving Manufactures.

200. SILK. For the greateſt quantity of merchantable Silk, not leſs than ten pounds weight, produced by worms bred in England in the year 1795, the property of any one perſon, the GOLD MEDAL.

SPECIMENS of the SILK, not leſs than one pound, with CERTIFICATES that the whole is of equal quality, and produced in England, to be delivered to the Society on or before the firſt Tueſday in January, 1796.

200.* For the ſecond greateſt quantity, not leſs than five pounds weight, the SILVER MEDAL.

The Specimens and Certificates to be delivered to the Society on or before the firſt Tueſday in January, 1796.

291. MACHINE FOR CARDING SILK. For the beſt Machine, ſuperior to

any now in uſe, for carding Waſte Silk equally well as by hand; to be produced, together with a ſpecimen of the Cardings, on or before the firſt Tueſday in November, 1795; the GOLD MEDAL, or THIRTY GUINEAS.

202. WEAVING FISHING-NETS, For the beſt ſpecimen of Plain Netting, for Fiſhing-Nets, ſuperior to any hitherto in uſe, not leſs than twenty yards long, and ſix feet deep, woven in a Loom, or other Machine; to be produced to the Society on or before the ſecond Tueſday in January, 1796; FIFTY GUINEAS.

N. B. It is expected that the Specimen produced be made in ſuch a manner, as to be cut and joined without more loſs than uſual; that it have ſuch a plain ſelvage as the common Fiſhing-Nets; and that the Knot be equally faſt with thoſe in Nets in common uſe, and as eaſily repaired.

203. CLOTH FROM HOP-STALKS OR BINES. To the perſon who ſhall pro-

produce to the Society the greateſt quantity, not leſs than thirty yards, of Cloth, at leaſt twenty-ſeven inches wide, made in England or Wales of Hop-Stalks or Bines, and ſuperior to any hitherto manufactured in England of that material, the GOLD MEDAL, or THIRTY GUINEAS.

One pound of the Thread of which the Cloth is made, and thirty yards of the Cloth, together with proper CERTIFICATES that the whole is manufactured from Hop-Stalks or Bines, to be produced to the Society on or before the ſecond Tueſday in December, 1795.

N. B. The Society are already in poſſeſſion of Cloth made in England from Hop-Stalks or Bines, which may be inſpected by application to the Regiſter.

204. WICKS FOR CANDLES OR LAMPS. To the perſon who ſhall diſcover to the Society a method of manufacturing Hop-Stalks or Bines, or any other cheap material, the growth of England or Wales,

Wales, ſo as to render them fit for the purpoſe of ſupplying the place of Cotton, for Wicks of Candles or Lamps, TWENTY GUINEAS.

SAMPLES, not leſs than five pounds weight, of the Wicks, ſo prepared, to be produced to the Society, with CERTIFICATES that the whole quantity is equal in quality to the Sample produced, on or before the ſecond Tueſday in January, 1796.

205. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced on or before the ſecond Tueſday in January, 1797.

206. PAPER FROM RAW VEGETABLE SUBSTANCES. To the perſon in England or Wales who ſhall make the greateſt quantity, not leſs than ten reams, of the beſt and moſt uſeful Paper, from Raw Vegetable Subſtances, TWENTY GUINEAS.

CER-

CERTIFICATES of the making ſuch Paper, and one ream of the Paper, to be produced on or before the firſt Tueſday in November, 1795.

N. B. The Society are in poſſeſſion of two volumes, containing a great variety of ſpecimens of Paper made from Raw Vegetables, viz. Thiſtles, Potatoe-Haum, Poplar, Hop-bines, &c. which volumes may be inſpected by any perſon, on application to the Regiſter.

207. STARCH FROM HORSE CHESNUTS. To the Starch-maker, who ſhall make the greateſt quantity, not leſs than two hundred weight, of Starch, from the fruit of the Horſe Cheſnut, TWENTY GUINEAS.

Five pounds of the Starch, ſo prepared, with Certificates that the whole quantity is of the ſame quality, to be produced to the Society on or before the ſecond Tueſday in January, 1796.

N. B.

N. B. The Society think it neceſſary to caution all perſons, who are not duly licenſed Starch-makers, to avoid making any experiments on preparing Starch in conſequence of this advertiſement, leſt they ſhould incur the penalties mentioned in the ſeveral Acts of Parliament made for the regulation of the manufacture of Starch.

208. MAINTAINING AND EMPLOYING THE POOR. To the perſon who ſhall produce to the Society, the beſt practical and moſt œconomical Plan for the maintenance and employment of the Poor in Pariſh Workhouſes, ſuperior to any hitherto generally known, the GOLD MEDAL, or FIFTY GUINEAS.

The Plans to be delivered to the Society on or before the firſt Tueſday in March, 1796.

Pre-

Premiums for Inventions in Mechanicks.

209. TRANSIT INSTRUMENT. To the perſon who ſhall invent and produce to the Society a cheap and portable Tranſit Inſtrument, which may eaſily be converted into a Zenith Sector, capable of being accurately and expeditiouſly adjuſted for the purpoſe of finding the Latitudes and Longitudes of places, and ſuperior to any portable Tranſit Inſtrument now in uſe, the GOLD MEDAL, or FORTY GUINEAS.

To be produced on or before the laſt Tueſday in January, 1796.

210. TAKING WHALES BY THE GUN-HARPOON. To the perſon who, in the year 1795, ſhall ſtrike the greateſt number of Whales, not fewer than three, with the Gun-Harpoon, TEN GUINEAS.

Proper CERTIFICATES of the ſtriking ſuch Whales, and that they were actually taken in the year 1795, ſigned by the Maſter,

or

or by the Mate when the Claim is made by the Maſter, to be produced to the Society on or before the laſt Tueſday in December, 1795.

211. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1796.

212. DRIVING BOLTS INTO SHIPS. To the perſon who ſhall invent and produce to the Society a Model, ſhewing a method of driving Bolts into Ships, particularly thoſe of Copper, without ſplitting the head or bending them, with more diſpatch, in all directions, and tighter than by any means hitherto known or in uſe, THIRTY GUINEAS.

The Model, with CERTIFICATES that a Machine on the ſame conſtruction has been uſed to advantage, to be produced to the

the Society on or before the firſt Tueſday in February, 1796.

213. PORTABLE MACHINE FOR LOADING AND UNLOADING GOODS. To the perſon who ſhall produce an Invention to the Society, of the beſt, moſt ſimple, and portable Machine, ſuperior to any hitherto known, or in uſe, for the purpoſe of loading and unloading goods; the GOLD MEDAL, or FORTY GUINEAS.

The Machine itſelf, or a Model of it, to be delivered to the Society on or before the firſt Tueſday in January, 1796.

214. METAL ROPE OR CHAIN. To the perſon who ſhall have invented a Chain or Rope of Copper, or other Metal, ſuperior to any hitherto made, ſufficiently flexible to work well, and in ALL DIRECTIONS, over pullies, and which ſhall ſerve every purpoſe of a good Hempen Rope, of at leaſt two inches diameter, the GOLD MEDAL, or FIFTY GUINEAS.

The Candidate to produce to the Society ſatisfactory CERTIFICATES that ſuch Metal Rope or Chain has been uſed to advantage in manufactories, or large works, where Hempen Ropes have been hitherto employed.

The CERTIFICATES, and a Sample of the Metal Rope or Chain, not leſs than ten yards long, to be produced to the Society on or before the firſt Tueſday in November, 1795.

215. HAND MILL. To the perſon who ſhall produce to the Society a better conſtructed Hand Mill, for general purpoſes, than any now known or in uſe, the SILVER MEDAL, or TWENTY GUINEAS.

To be delivered to the Society on or before the laſt Tueſday in December, 1795.

216. MACHINE FOR RAISING COALS, ORE, &c. &c. To the perſon who ſhall invent a Machine for raiſing Coals,

Coals, Ore, &c. from Mines, which ſhall produce the effect at a leſs expence than thoſe already known or in uſe, the GOLD MEDAL, or FIFTY GUINEAS.

A Model of the Machine, made on a ſcale of not leſs than one inch to a foot, to be produced to the Society on or before the ſecond Tueſday in February, 1796.

217. MACHINE FOR RAISING WATER. To the perſon who ſhall invent a Machine on a better, cheaper, and more ſimple conſtruction than any hitherto known or in uſe, for raiſing Water out of Wells, &c. from a depth not leſs than fifty feet, the GOLD MEDAL, or FORTY GUINEAS.

CERTIFICATES of the performance of the Machine, and a Model of it, on a ſcale of not leſs than one inch to a foot, to be produced to the Society on or before the firſt Tueſday in February, 1796.

218. MACHINE FOR CLEARING RIVERS. For the beſt Model of a Machine, ſuperior to any now in uſe, for clearing Navigable Rivers from Weeds at the leaſt expence, the GOLD MEDAL, or FORTY GUINEAS.

To be produced to the Society on or before the firſt Tueſday in February, 1796.

219. METHOD OF EXTINGUISHING FIRES. To the perſon who ſhall produce to the Society, the moſt ſpeedy and effectual method of extinguiſhing Fires in houſes or other buildings, ſuperior to any hitherto known or in uſe, the GOLD MEDAL, or FIFTY GUINEAS.

To be produced on or before the ſecond Tueſday in February, 1796.

220. PREVENTING WATER FREEZING IN PIPES. To the perſon who ſhall invent and diſcover to the Society a cheap and effectual Method, ſuperior to any hitherto in uſe, for preventing the Water

Water freezing in Pipes, ſerving to ſupply dwelling-houſes or other buildings, the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES of the utility of the method, to be delivered to the Society on or before the firſt Tueſday in March, 1796.

221. IMPROVEMENT OF WHEEL-CARRIAGES. To the perſon who ſhall diſcover to the Society the principles, and point out the conſtruction, upon which Wheel-Carriages may be drawn with the leaſt fatigue to the horſe or horſes employed, the GOLD MEDAL, or FIFTY GUINEAS.

The CLAIMS to be delivered to the Society on before the ſecond Tueſday in December, 1795.

222. PREVENTING HORSES TURNING ABOUT IN DRAWING WATER, &c. To the perſon who ſhall

invent and produce to the Society a Model, on a ſcale of not leſs than one inch to the foot, ſhewing an eaſy, ſafe, and expeditious method to obviate the neceſſity of the horſes employed in raiſing Water out of deep Wells, drawing Ore from Mines, or Coals from Pits, turning about at the time the Water, Ore, or Coal is delivered; the GOLD MEDAL, or FORTY GUINEAS.

The Model to be produced to the Society, with CERTIFICATES of a Machine on the ſame conſtruction having been uſefully employed, on or before the firſt Tueſday in February, 1796.

223. The ſame premium is extended one year further.

The MODEL and CERTIFICATES to be produced on or before the firſt Tueſday in February, 1797.

224. BORING ROCKS IN ORDER TO BLAST THEM. To the perſon who

who ſhall diſcover to the Society, a more cheap, ſimple, and expeditious Method than any hitherto known or in uſe, of Boring Rocks in Mines, Shafts, Wells, &c. for the purpoſe of Blaſting them with Gunpowder, the GOLD MEDAL, or FORTY GUINEAS.

CERTIFICATES of the method having been practiſed with ſucceſs, with a full deſcription thereof, to be delivered to the Society on or before the firſt Tueſday in January, 1796.

Premiums offered for the Advantage of the Britiſh Colonies.

225. NUTMEGS. For the greateſt quantity of merchantable Nutmegs, not leſs than ten pounds weight, being the growth of his Majeſty's dominions in the Weſt Indies, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal to thoſe imported from the Iſlands of the Eaſt Indies, the GOLD MEDAL, or ONE HUNDRED GUINEAS.

Satisfactory CERTIFICATES, from the Governor, or Commander in Chief, of the place of growth, with an account of the number of trees, their age, nearly the quantity of fruit on each tree, and the manner of culture, to be produced on or before the firſt Tueſday in December, 1795.

226. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in December, 1796.

227. CINNAMON. For importing into the port of London, in the year 1795, the greateſt quantity, not leſs than twenty pounds weight, of Cinnamon, being the growth of ſome of the Iſlands in the Weſt-Indies belonging to the Crown of Great-Britain, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal in goodneſs to the Cinnamon brought from the Eaſt-Indies, the GOLD MEDAL, or FIFTY GUINEAS.

SAMPLES, not leſs than two pounds weight, with CERTIFICATES that the whole quantity is equal in goodneſs; together with ſatisfactory CERTIFICATES, ſigned by the Governor, or Commander in Chief, of the place of growth, with an account of the number of trees growing on the ſpot, their age, and the manner of cul-

ture; to be produced to the Society, on or before the firſt Tueſday in January, 1796.

228. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1797.

229. PLANTATIONS OF BREAD-FRUIT TREE. To the perſon who ſhall have raiſed in any of the Iſlands of the Weſt-Indies ſubject to the Crown of Great Britain, or in any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, between the firſt of January, 1795, and the firſt of January, 1796, the greateſt number of Bread-fruit Trees, not fewer than one hundred, and properly fenced and ſecured the ſame, in order to ſupply the Fruit to the Inhabitants, the GOLD MEDAL, or THIRTY GUINEAS.

Proper ACCOUNTS and CERTIFICATES, ſigned by the Governor or Commander in Chief,

Chief, of the methods made uſe of in cultivating the Plants and ſecuring the Plantation, and that the Trees are in a growing and thriving ſtate at the time of ſigning ſuch Certificates, to be produced to the Society on or before the firſt Tueſday in January, 1797.

230. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

231. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1799.

232. KALI FOR BARILLA. To the perſon who ſhall have cultivated, in the Bahama Iſlands, or any other part of his Majeſty's dominions in the Weſt Indies, or any

any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, in the year 1792, the greateſt quantity of land, not leſs than two acres, with Spaniſh Kali, fit for the purpoſe of making Barilla, the GOLD MEDAL, or THIRTY GUINEAS.

233. For the next greateſt quantity, not leſs than one acre, the SILVER MEDAL, or FIFTEEN GUINEAS.

CERTIFICATES, ſigned by the Governor, or Commander in Chief for the time being, of the quantity of land ſo cultivated, and of the ſtate of the Plants at the time of ſigning ſuch Certificates, to be delivered to the Society on or before the ſecond Tueſday in November, 1795.

234, 235. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1796.

236.

236, 237. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1797.

238. DISCOVERY OF A PASSAGE BY LAND FROM UPPER CANADA TO THE SOUTH SEA. To the perſon who ſhall firſt diſcover a Paſſage by Land, from the north-weſt parts of Upper Canada to the South Sea, between Nootka Sound and the Straits of Kamſchatka, or to the navigable part of any River that diſembogues itſelf into the South Sea within thoſe limits, the GOLD MEDAL.

Such diſcovery to be aſcertained by a CERTIFICATE under the hand and ſeal of the Governor, or Commander in Chief for the time being, of the ſaid province of Upper Canada.

239. DESTROYING THE INSECT COMMONLY CALLED THE BORER. To

To the perſon who ſhall diſcover to the Society an effectual method of deſtroying the Inſect commonly called the BORER, which has of late years been ſo deſtructive to the Sugar-Canes in the Weſt-India Iſlands, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, the GOLD MEDAL, or FIFTY GUINEAS.

The Diſcovery to be aſcertained by ſatisfactory CERTIFICATES, under the hand or ſeal of the Governor or Commander in Chief for the time being, and of ſome other reſpectable perſons, inhabitants of the Iſlands, or other place, in which the remedy has been ſucceſsfully applied; ſuch CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in January, 1796.

240. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in January, 1797.

241.

241. BOTANIC GARDEN IN THE BAHAMA ISLANDS. To the perſon who, before the firſt of January, 1795, ſhall ſet apart, and properly fence and cultivate, the greateſt quantity of ground, not leſs than five acres, in any of the Bahama Iſlands, as a Botanic Garden, for the purpoſe of making experiments in the culture of thoſe articles which are the peculiar production of the tropical climates, and which may tend to promote the commerce and manufactures of this country; the GOLD MEDAL, or ONE HUNDRED GUINEAS.

It is required that any perſon claiming the foregoing premium, ſhould produce to the Society, on or before the firſt Tueſday in January, 1796, a CERTIFICATE from the Governor or Commander in Chief of the Bahama Iſlands for the time being, of his having complied with the above requiſitions, and that the Garden is in a proper ſtate of culture at the time of ſigning ſuch Certificate.

242. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1797.

243. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

244. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1799.

Society's

Society's Office, Adelphi, June 3, 1795.

Ordered,

THAT THE SEVERAL CANDIDATES AND CLAIMANTS TO WHOM THE SOCIETY SHALL ADJUDGE PREMIUMS OR BOUNTIES, DO ATTEND AT THE SOCIETY'S OFFICE IN THE ADELPHI, ON THE LAST TUESDAY IN MAY, 1796, AT TWELVE O'CLOCK AT NOON, TO RECEIVE THE SAME; THAT DAY BEING APPOINTED BY THE SOCIETY FOR THE DISTRIBUTION OF THEIR REWARDS: AND BEFORE THAT TIME NO PREMIUM OR BOUNTY WILL BE DELIVERED, EXCEPTING TO THOSE WHO ARE OUT OF THE KINGDOM, OR PREVENTED BY UNAVOIDABLE ACCIDENTS.

IN CASES WHERE THE SOCIETY MAY THINK FIT TO ADMIT EXCUSES FOR NOT ATTENDING IN PERSON, DEPUTIES MAY BE SUBSTITUTED TO RECEIVE THE REWARDS, PROVIDED SUCH DEPUTIES ARE EITHER MEMBERS OF THE SOCIETY, OR THE SUPERIOR OFFICERS THEREOF.

GENERAL

GENERAL CONDITIONS.

NOTWITHSTANDING the Society reſerve to themſelves the power of giving, in all caſes, ſuch part only of any Premium as the Performance ſhall be adjudged to deſerve, or of withholding the whole, if there be no merit; yet the Candidates many be aſſured the Society will always judge liberally of their ſeveral claims.

It is required that the matters for which Premiums are offered, be delivered in without names, or any intimation to whom they belong; that each particular thing be marked in what manner each Claimant thinks fit, ſuch Claimant ſending with it a paper ſealed up, having on the outſide a correſponding mark, and on the inſide the Claimant's name and addreſs: and all Candidates are to take notice, that no claim for a Premium will be attended to, unleſs the conditions of the Advertiſement are fully complied with.

No

No Papers ſhall be opened, but ſuch as ſhall gain Premiums, unleſs where it appears to the Society abſolutely neceſſary for the determination of the Claim; all the reſt ſhall be returned unopened, with the Matters to which they belong, if inquired after by the Mark, within two years; after which time, if not demanded, they ſhall be publicly burnt, unopened, at ſome meeting of the Society.

All Models of Machines, which obtain Premiums or Bounties, ſhall be the property of the Society.

All the Premiums of this Society are deſigned for that part of Great Britain called England, the dominion of Wales, and the town of Berwick upon Tweed, unleſs expreſsly mentioned to the contrary.

The Claims ſhall be determined as ſoon as poſſible after the delivery of the ſpecimens.

No perſon ſhall receive any Premium, Bounty, or Encouragement, from the Society, for any matter for which he has obtained, or propoſes to obtain, a patent.

A Candidate for a Premium, or a perſon applying for a bounty, being detected in any diſingenuous method to impoſe on the Society, ſhall forfeit ſuch Premium or Bounty, and be deemed incapable of obtaining any for the future.

The Performances which each year obtain Premiums or Bounties, are to remain with the Society until the end of May, except as mentioned in the Conditions annexed to the Premiums offered for promoting the Polite Arts.

No member of this Society ſhall be a Candidate for, or entitled to receive, any Premium, Bounty, or Reward whatſoever, except the Honorary Medal of the Society.

Where Certificates are required to be produced in claim of Premiums, they ſhould be expreſſed, as nearly as poſſible, in the words of the reſpective advertiſements, and ſhould not be from the Candidate (ſolely), but from ſome other perſon or perſons who have a poſitive knowledge of the facts certified.

Where Premiums or Bounties are obtained in conſequence of ſpecimens produced, the Society mean to retain ſuch part of thoſe ſpecimens as they may judge neceſſary, making a reaſonable allowance for the ſame.

No Candidates ſhall be preſent at any meetings of the Society or Committees, or admitted at the Society's Rooms, after they have delivered in their Claims, until ſuch Claims are adjudged, unleſs ſummoned by the Committee.

N. B. Any information or advice that may forward the deſigns of this Society for the public good, will be received thankfully, and duly conſidered, if communicated by letter, addreſſed to the Society, and directed to Mr. MORE, the Secretary, at the Society's Office, in the Adelphi Buildings, London.

*** In caſe any perſon ſhould be inclined to leave a ſum of money to this Society, by will, the following form is offered for that purpoſe:

Item. I give and bequeath unto A. B. and C. D. the ſum of upon condition and to the intent that they, or one of them, do pay the ſame to the Collector for the time being, of a Society in London, who now call themſelves the Society for the Encouragement of Arts, Manufactures, and Commerce; which ſaid ſum of I will and deſire may be paid out of my perſonal eſtate, and applied towards the carrying on the laudable deſigns of the Society.

By order of the Society,

SAMUEL MORE, Secretary.

PAPERS

IN

AGRICULTURE.

AGRICULTURE.

THE following Accounts and Certificates having been received, the GOLD MEDAL, being the firſt Premium offered for raiſing OAKS from ACORNS, ſown or planted between the firſt of October, 1793, and the firſt of April, 1794, was this year adjudged to SAMUEL KILDERBEE, of Ipſwich, Eſq.

SIR,

I HEREBY acquaint you, that, in the month of November, 1793, I planted ten acres of land with Acorns, of which the incloſed is a Certificate.

The plantation was made upon a farm in the pariſh of Great Glemham, in this county. The land planted, meaſures ten acres and ten perches; the quality of it is a dark grey looſe mould, about four or five

inches deep, which in this country is called a Woodcock Soil, and lies upon a ſtrong wet clay. A ſimilar ſoil prevails in in the adjoining fields, where Oaks are free growers.

In the year 1791, the field planted was in graſs, and rented upon an average, with others of the ſame ſort, at eight or nine ſhillings an acre.

In 1792, it was broken up and ſown with oats: in 1793, it was ploughed, harrowed, and rolled at various times, and made a perfect, clean, ſummer fallow: in the autumn of the ſame year, it was ſown with wheat upon a broad ſtetch; but before the wheat was ſown, aſhen keys and white-thorn berries, of a year old, with a ſmall quantity of whin ſeeds, were thrown upon the ground, and afterwards harrowed in; and in the November following, three rows of Acorns were dibbled in upon each ſtetch, and the holes filled up by a perſon who followed the dibbler with a hoe for that purpoſe.

At

At the time of dibbling-in the Acorns, the graſs of the wheat had, in part, covered the ground. The Acorns were ſet at about eight or nine inches diſtance in length, and about twelve in breadth of the ſtetch from each other. The aſhen keys, white-thorn berries, and whin ſeeds, were ſown with a deſign to protect and nurſe up the produce of the Acorns, and prevent their being deſtroyed by hares or rabbits. The Acorns have produced a ſufficient number of plants, of which I had deſpaired, as they were not of the beſt quality (though the beſt that could be procured); and as the drought of the ſpring proved very ſevere, the plants are ſmall, but look healthy and well.

I was induced to ſow wheat upon the field alluded to, becauſe, in the autumn of the year 1780 or 1781, I planted a piece of land of five acres with Acorns and aſhen keys, without ſowing wheat or any other ſeeds, and a total failure took place. This piece had been long in plough tilth, and is of a better quality than that planted in the

the laſt autumn: it was previouſly made clean by proper culture; but neither Acorns nor aſhen keys ſucceeded; for the mice deſtroyed the greateſt part of the former, and the latter, having no ſhelter to protect them from the rays of the ſun, were burnt up in the following ſummer. This field was not planted again until the year 1785; but by the autumn of that year it was in good condition for the reception of wheat, and then ſowed with that grain upon a broad ſtetch. After the wheat was well up, Acorns were dibbled in, but no other ſeeds were thrown over the ground previous to it: the Acorns ſucceeded to my wiſhes; a great number of young Oaks appeared; and when the wheat was ripe, the reapers were ordered to leave the ſtubble high for their protection and defence. The wheat crop cleared upwards of thirty-five pounds, and the plantation looks thrifty and well.

The ſucceſs I had in this plantation, encouraged me to purſue a like method with that made laſt autumn, that is, by ſowing the

the land with wheat, before the Acorns were dibbled in, as in the above inſtance I had moſt ſatisfactorily experienced the good effect of ſuch a caution: and to guard againſt injury from the bite of hares and rabbits, aſhen keys and white-thorn berries, with a few whin ſeeds, (as I have mentioned) were previouſly thrown over the ground. In this caſe, I gave the tenant the wheat crop for tilling the ground, and he will be amply recompenced by it.

Some years ſince, I trenched a ſmall piece of ground two ſpits deep, in a ſoil like that planted in the laſt autumn; it was afterwards ſet with Acorns, without adding any other ſeeds: the Acorns quickly vegetated. I believe the ground was once or twice cleaned by the hoe. The plants grew in ſize and height far beyond thoſe which had been planted after common ploughings; and the ſtate they are now in gives that mode, in my mind, a decided preference.

About the ſame time that the trenched piece of ground was planted, another ſmall piece

piece, of a like quality, was broken up, and, the ſlag having been regularly turned with the graſs downward, ſet with Acorns. Theſe did not ſucceed ſo well as I expected: but ſuch plants as appeared, have not been ſlower in growth than thoſe produced upon land properly prepared for wheat, yet by no means equal to the growth of thoſe ſet upon the trenched piece of ground.

From the above experiments and obſervations, it appears to me, that the beſt method, and the moſt profitable in the end, of making plantations of Oak, is, by trenching ground a proper depth; and the next, that of dibbling in Acorns upon land ſown with wheat or rye: for I think the roots of corn are a check to the ſudden growth of weeds; the graſs of it tends to preſerve Acorns from mice, and the ſtubble, when left high, affords a neceſſary ſhelter, until a better comes forward.

To the planting of young Oaks from a nurſery, I have never attended, though the practice has frequently been recommended; but

but I am inclined to believe, that no tree, which has a tap-root like the Oak, will do ſo well tranſplanted, as it will in the ſpot where the Acorn firſt vegetated and made its ſhoot.

In the year 1722, upon a farm near adjoining to that where the plantation was made in laſt autumn, three acres of land, of a Woodcock ſoil, were ſown with Acorns, and ploughed in: I believe no other ſeeds were ſown with them. To all appearance, a plentiful crop was the conſequence of it; but the trees were ſuffered to ſtand near forty years (much too long) before any were taken out: at that period I began to thin them, and continued it by degrees, until the laſt year. The quality of the land, upon which this plantation was made, has been conſidered, as to what may be ſuppoſed to have been its utmoſt annual value from time to time, as the value of land increaſed, to the preſent time, and an accumulated intereſt computed upon it: the profit received by thinning the Oaks, has alſo been calculated,

culated, and an accurate eſtimate of the value of thoſe now remaining has this autumn been made; and taking every attendant circumſtance into conſideration, I am induced to ſuppoſe, the produce in value to the landlords, from the year 1722 to the preſent time, has been equal to what the rent of the land, with an accumulated intereſt upon it, would have amounted to, had it been continued in the hands of a tenant in graſs or in plough tilth: and I am confident, that the value of the trees now left ſtanding is double to that of the inheritance of the ſoil, ſetting a full value upon it per acre, and calculating its price at twenty-eight years purchaſe.

I am preparing to plant another piece of land, of about eight acres, in the autumn of the next year; but as it is at a conſiderable diſtance, and I cannot conveniently inſpect the trenching ſo large a ſpot, though convinced of its utility, my deſign is, to purſue the mode obſerved in making the plantation in the autumn of the laſt year, unleſs the

the Society will be ſo obliging as to furniſh me with a better, reſulting from their extenſive and uſeful communications on the ſubject of planting: and wiſhing that this may convey ſome ſatisfactory information,

I remain, Sir,

Your obedient Servant,

SAMUEL KILDERBEE.

Ipſwich,
September 27, 1794.

Mr. SAMUEL MORE.

MR. DENNY is deſired to anſwer the following queſtions, as near to the truth as he can, reſpecting the planting of ten acres of land with Acorns, in the autumn of the year 1793, upon a farm belonging to Mr. KILDERBEE, in Great Glemham, in the county of Suffolk, and then and now in the occupation of Robert Berrett.

How many buſhels of Acorns were ſet upon an acre?

One buſhel and one peck. How

How many Acorns do you ſuppoſe each buſhel contained?

Seven thouſand three hundred and ſixty.

How many young Oaks do you believe there are one each acre, could they be clearly ſeen and counted?

At leaſt five hundred.

Witneſs my hand, this ſecond day of December, one thouſand ſeven hundred and ninty-four,

JOHN DENNY.

Witneſs,

WILLIAM BROWNE, Rector of Dallinghoe.

WE do hereby certify, that Mr. Samuel Kilderbee, of Ipſwich, the owner of a farm in Great Glemham, in the county of Suffolk, in the occupation of Robert Berrett, cauſed a piece of graſs land belonging thereto, of upwards of ten acres, to be fenced in and broken up;—that it was afterwards ſown with oats;—that by the

the autumn of the year 1793, it was made fit for the reception of wheat: that wheat was ſown on a broad ſtetch with aſhen keys, white-thorn berries, and a few whin ſeeds: that, ſoon after the ſowing thereof, (that is to ſay, in the month of December 1793) the whole field was ſet with Acorns, three rows upon a ſtetch, and dibbled-in after the manner of ſetting broad beans.

Witneſs our hands, this ninth day of Auguſt, 1794,

ROBERT BERRETT, Occupier of the farm.

WIILLIAM DOWNING, who dibbled the ground.

JOHN DENNY, who attended to the putting in of the Acorns, and who filled up the holes.

Several Accounts were this Seſſion produced in claim of the Premiums offered for PLANTATIONS of OSIERS: and the firſt Premium, TWENTY POUNDS, was adjudged to the Right Honourable LORD BROWNLOW; and TEN POUNDS, the ſecond Premium, to JOHN PHILLIPS, Eſq. But the Society, in due conſideration of the merit of the Paper ſent by SAMUEL CRAWLEY, Eſq. and the information contained therein on the ſubject of gaining Land from Rivers, and planting the ſame with OSIERS, have voted to him their SILVER MEDAL, as it is preſumed his communication on thoſe matters may prove of conſiderable advantage to the Public.

SIR,

MR. Samuel Edwards, of Stamford, Agent for the eſtates of the Right Honourable Lord Brownlow, near Stilton, in the county of Huntingdon, having informed us of his intentions to apply, on behalf of his Lordſhip, to the Society for the

the Encouragement of Arts, Manufactures, and Commerce, for the Premium offered by that Society to perſons planting Oſiers on their eſtates; and having deſired us to ſtate and certify the truth of certain facts relating to the Oſiers planted on Lord Brownlow's eſtate; we have therefore, in conſequence of ſuch application, troubled you with the following ſtatement.

Lord Brownlow is the proprietor of an eſtate in Farcett Fen, near Stilton, from part of which the moor or turf has lately been dug or taken out, in order to prepare the ground for planting of Oſiers; and about twenty-ſix acres, as near as we can judge, have been planted with Oſiers, the greateſt part whereof is in a very thriving ſtate. The principal part of the ground was planted in the winter and ſpring of the years 1793 and 1794: but as we are informed our ſtatement ſhould be confined more particularly to the Oſiers planted in 1794, we have directed our obſervations with greater attention to this part of the plantation; and we find that about one hundred and forty-

five thouſand Oſier-ſets of different ſorts, (namely, the common Oſier and the new kind) with ſome other ſorts, were planted in the winter and ſpring 1794, upon the ſaid eſtate of Lord Brownlow, in certain places called Conqueſt Lands, and eight roods in Farcett Fen, upon different parcels of land, not exceeding twelve acres in the whole, after deducting dikes, grips, and other waſte land, as near as we can judge upon a view thereof, and from the ſurvey produced to us by William Todd, the reſident Agent of thoſe eſtates, and other information we have obtained. And we further beg leave to repreſent to you, that the laſt-mentioned Oſiers are in general in a very thriving ſtate, many of the ſhoots being upwards of eight feet long, and now fit for the uſe of baſket-makers, as we are informed.

THOMAS BIRD, Churchwarden.
WILLIAM EDIS, Overſeer of the Poor of Farcett, near Stilton.

Farcett, near Stilton.
Nov. 10, 1794.

Mr. MORE.

I.

I, WILLIAM TODD, of Farcett, reſident Agent of the eſtate of the Right Hon. Lord Brownlow, near Stilton, do hereby declare that the foregoing ſtatement or certificate, under the hands of the above-named Thomas Bird and William Edis, is true; the whole buſineſs relating to the preparing the ground, purchaſing the Oſier ſets, and planting the ſame, having been under my management, ſubject to the directions of Mr. Samuel Edwards, of Stamford, the principal agent of the ſaid eſtate.

WILLIAM TODD.

I, SAMUEL EDWARDS, of Stamford, in the county of Lincoln, Agent or Receiver of the Eſtates of the ſaid Lord Brownlow, near Stilton, do hereby declare that the foregoing ſtatement, ſigned by Thomas Bird and William Edis, the Churchwarden and Overſeer of the Poor of Farcett, is true; the whole of the buſineſs relating to the preparing the ground and planting

the Oſiers, as therein deſcribed, having been planted and directed by me,

SAMUEL EDWARDS.

SIR,

I RECEIVED yours of the 9th inſtant, reſpecting the Oſiers planted on the eſtate of Lord Brownlow, in Farcett Fen; and have refered to my books, where it plainly appears to me that nine acres of the twelve were planted between the firſt of January, and the firſt of May, 1794. If this ſhould not ſatisfy your inquiry, ſhall be ready to anſwer any future one (as far as I am able) that you, or the Society for Encouragement of Arts, may require; and am,

SIR,

Your very humble ſervant,

W. TODD.

Farcett,
Dec. 14, 1794.

Mr. MORE.

I HEREBY certify, that, in the month of March laſt, at Kettleſworth, in the pariſh of Ely, in the county of Cambridge, I planted of Oſiers, fit for the uſe of baſket-makers, at the rate of between thirteen and fourteen thouſand ſets an acre, ſix acres, one rood, and thirty-five poles: and I further certify, that they have been well fenced, and are in a flouriſhing condition.

At Littleport, about two miles from my farm, there are conſiderable plantations of the ſame ſort. I frequently viſited them, with a view to my future experiments, and examined the ſoil very particularly; I found it to conſiſt chiefly of ſilth, or ſmall ſoft ſand mixed with a grey clay; and it has been ſuppoſed that they flouriſh beſt in that ſoil. There are at leaſt one hundred thouſand acres of land in the Fens which adjoin me, of black turf or peat, which upon an average are not worth each more than three ſhillings by the year: I have about one hundred acres of the ſame ſoil; and I thought it might be of great public advantage, if my

experiments ſucceeded in growing Oſiers on land of ſo little value for any other purpoſe. I found that the land which I have planted is from two to ten feet deep of peat, with, in ſome places underneath it, a gravelly ſoil, and in others, a ſtrong blue clay fit for brickmaking. I firſt intended to plough, as the cheapeſt method of preparing the land; but I was adviſed, by my neighbours, to get it dug or ſpaded. I followed that advice, and the digging coſt me three pounds an acre; the plants coſt me, from ten to fifteen ſhilling a thouſand, and the ſetting of them came to ten ſhillings an acre. There were ſix different ſorts; but thoſe moſt in requeſt, and which ſeem to ſhoot longeſt, are what is called the *New Kind*, and the *Weſt-Country Spaniard*.

It is with difficulty the two latter can be obtained in the neighbourhood, as there are many jealous of my extending my plantations, and thereby reducing the price of Oſiers, and of conſequence leſſening the value of their plantations.—Where the peat

was

was deepeſt, ſets of twenty-two inches were uſed, eight inches of which were left above ground; I ordered a few of fourteen inches long, ſeven inches of which were left above the ſurface of the land. The former flouriſhed much better than the latter, owing perhaps to the dryneſs of the ſeaſon; for although they do not ſtrike root many inches below the ſurface, the lower and decaying part ſerved to convey moiſture to the upper and growing part. Where the peat was ſhalloweſt, I planted ſome, leaving a foot above ground, and of equal depth with the others in the like ſoil: I found very little difference in point of growth between theſe, and thoſe in a ſimilar ſoil that had only eight inches above ground; but I was not obliged to weed them ſo early or ſo often, as the ſhoots ſtood farther from the reach of weeds and fen graſs. One rood and twenty-ſix perches were ſet with yearlings, although I had been told that none would flouriſh under two years old: amongſt theſe there were ſome, one length of which only

had been taken from the yearling ſhoot, and that from the loweſt and biggeſt part, the remainder having been rejected as too weak; theſe flouriſhed as well as the two-years old. There were others, two or three lengths of which had been cut from the ſhoot; but the ſlendereſt of theſe are not ſo vigorous, although quite as healthy as the former.

A ſmall part of the ground was, by way of experiment, kept quite clear of weeds and graſs; and there, I found, they did not ſucceed ſo well: the ſun was introduced, and deſtroyed the moiſture, which tends ſo much to their ſupport. When I perceived the effect, I ordered ſome cole ſeed to be ſown very thinly upon this ſpot: the Oſiers very ſoon felt the effect, and at Michaelmas they were as flouriſhing as the others. I was, however, obliged after that time to take it up, as it grew ſo large as to threaten to choak the ſhoots. It made excellent feed for the ſheep: turneps, I think, would do better.

I planted, by way of experiment, ſome upon a bank thrown up about two feet high, according to the cuſtom of the neighbourhood; but here they did not ſucceed ſo well; and I am perſuaded that, whenever the water can be conveyed off the land in ſummer, as mine is, by a mill or water-engine, they will do better than upon the level land without ditch or bank.

In the month of May I burnt the ſurface of ſome land, (in the weſt, called Denſhiring) at the diſtance at leaſt of forty yards from the plantation, and was very ſoon much alarmed at the injuries which thoſe that were next to it ſeemed to have ſuſtained; for although they were out of the reach of the fire, the ſmoke made the leaves curl, and the ſmaller ſhoots were much withered. The fire having been extinguiſhed, and a ſhower of rain falling ſoon after, they quickly recovered, and became equal to any of the others.

Having ſown this year ſeveral acres of cole ſeed, which is now feeding off with

ſheep, by which the land will be manured, I ſhall next year plough the ſurface in, and then plough a furrow deeper, in which I ſhall plant, if I can get ſets, without being at the great expence of conveying them from the bank of the Thames: this will ſave at leaſt two pounds ten ſhillings an acre.

J. PHILLIPS.

King's Bench Walk, No. 3, Temple.
Nov. 24, 1794.

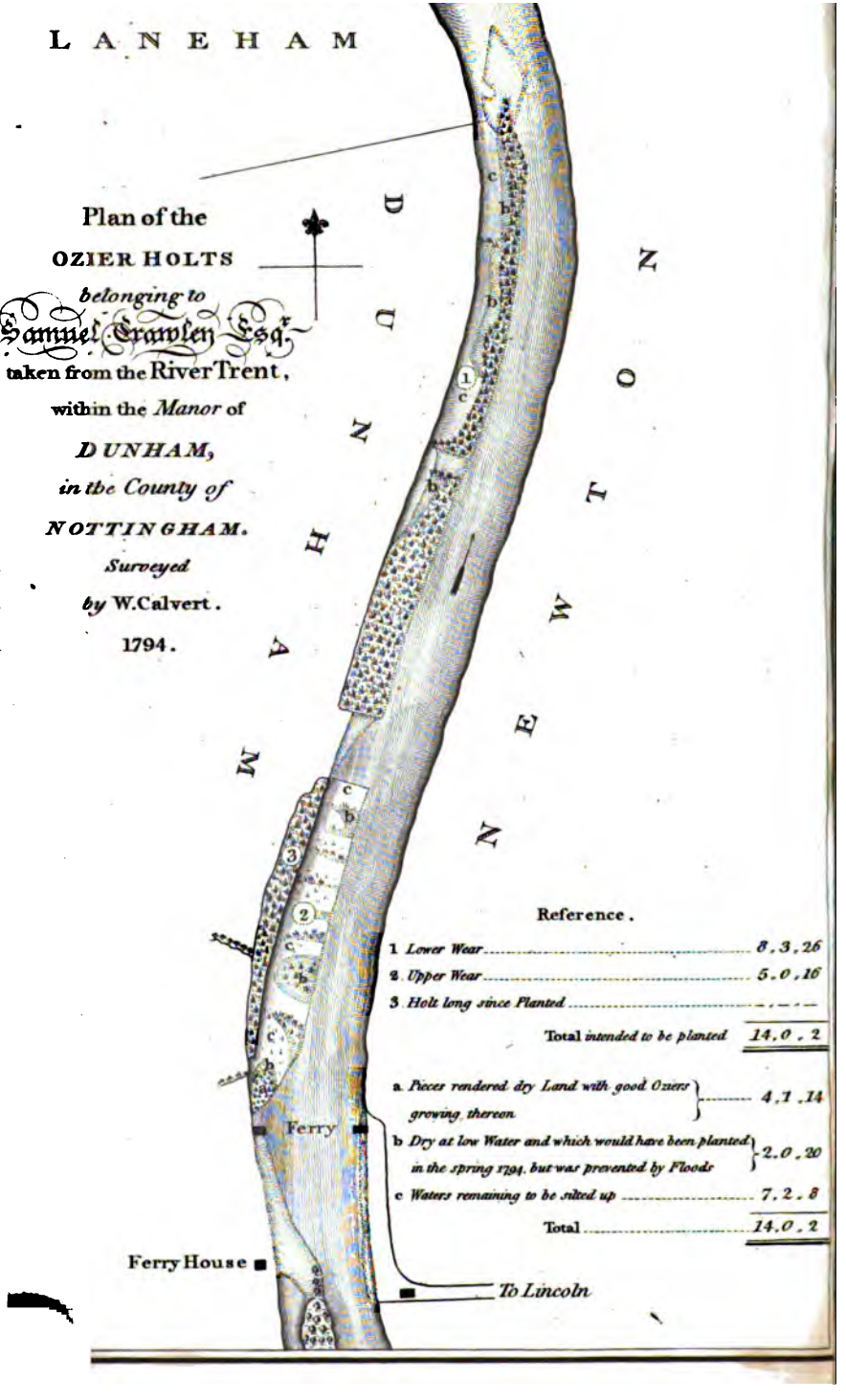
P. S. I have been offered four guineas an acre annually for my plantations.

JOHN PHILLIPS, of the Inner Temple, Eſq. in the month of March laſt, planted ſix acres and upwards with Baſket Oſiers, at Kettleſworth: they are well fenced, and in a flouriſhing condition; there were thirteen thouſand and more planted on an acre.

HENRY TANSLEY.

Littleport,
Nov. 27, 1794.

SIR,


LANEHAM
Plan of the
OZIER HOLTS
belonging to
Samuel Crawley Esq.
taken from the River Trent,
within the Manor of
DUNHAM,
in the County of
NOTTINGHAM.
Surveyed
by W. Calvert.
1794.
DUNHAM
NEWTON
Ferry
Ferry House
To Lincoln
Reference.
1 Lower Wear 8,3,26
2 Upper Wear 5,0,16
3 Holt long since Planted ..... - - -
Total intended to be planted 14,0,2
a Pieces rendered dry Land with good Oziers growing thereon 4,1,14
b Dry at low Water and which would have been planted in the spring 1794, but was prevented by Floods 2,0,20
c Waters remaining to be silted up 7,2,8
Total 14,0,2

SIR,

I SHALL be obliged to you to lay before the Society for the Encouragement of Arts, Manufactures, and Commerce, the following particulars, upon a ſubject which, I believe, comes under their plan of general improvement: ſhould it meet their approbation, and induce other gentlemen in ſimilar ſituations to profit by theſe hints, I ſhall be very happy, being perſuaded much Land may be gained, and at the ſame time the Navigation of Rivers conſiderably benefited.

In the year 1788, when I came to this eſtate, I was informed, that the Trent Navigation Company had cauſed *Weirs* to be made to confine the water, and by that means deepen the channel of the River, and that Oſiers planted thereon would be advantageous. In the courſe of that ſummer, I made all the enquiries, and got all the information I poſſibly could; keeping in view always the method recommended by the

the Society, as practiſed in Holland, for gaining the Land from the Sea: and in the ſpring of 1789 I began planting and endeavouring to gain ground, putting the work under the direction and ſuperintendence of Mr. William Calvert, a ſurveyor, of conſiderable practice in the neighbourhood, to whom I am indebted for hints of the greateſt part of the means uſed.

We began with throwing all ſorts of rubbiſh into the river, to collect the ſoil and filth in its paſſage, trying various methods to effect it: but on what we had moſt reliance, and which has completely anſwered our expectation, was on faggots made of furze or gorſe, which were ſtaked down in different ways; but thoſe made into wiers, wherever there was a current to ſtop its courſe, we found to be of the greateſt ſervice to us.

I take the liberty of encloſing, for the inſpection of the Society, a Plan * of what has been done towards making theſe plantations

* See the Plan annexed, *Plate*, No 1.

tations or holts (for the Saxon word is ſtill in uſe here), whereby they will ſee how much I have gained and planted: indeed much more Land might have been planted in the laſt ſpring, had the water ſubſided earlier.

I am, SIR,

Your moſt obedient humble ſervant,

SAMUEL CRAWLEY.

Ragnall Hall, Nottinghamſhire.
Nov. 10, 1794.

SIR,

THIS is to certify, that, in the ſpring of 1789, Samuel Crawley, Eſq. ſubmitted to my care the directions of a deſign to gain from the River Trent, near Dunham Ferry, in the county of Nottingham, a long ſlip, which, prior to the undertaking, had been fenced off by the River Trent Company with Wiers, conſiſting of two rows of ſtakes, hedged and filled up with ſtones

ſtones above low-water mark, to contract and render the river deeper for navigation.

Having provided a great number of bundles or faggots of furze or whins (called here Gorſe Kids) they were, by means of hedge ſtakes with their ſmaller ends downwards, and about two inches of the collateral branches at the thicker end left on, faſtened down to the bottom of the River, in rows acroſs the ſlip, ſo as to form Weirs to ſtop the ſilth or mud: theſe wiers were placed at the diſtance of from twenty to thirty yards aſunder; and within the ſpaces, other kids were put down ſingly by the ſame method, at the diſtance of two or three yards from each other. This was only done where the water did not exceed three feet in depth; and great care was taken to ſecure the Weirs ſufficiently with ſtakes, to prevent the ſtream, at ſome times very rapid, from carrying away the kids; and alſo, to raiſe them ſo high, as to prevent the water, during ſummer, from running over. At the end of October following, on exa-

examination, we found the cavities within the kids perfectly full of ſand.

The enſuing ſpring, 1790, many Iſlands had formed within the Weirs, and great quantities of ſand had lodged below them; which were planted with healthy two-years-old cuttings of the Wicker Oſiers, commonly called the Spaniſh or New Kinds, at the rate of three ſets in a ſquare yard, making fourteen thouſand five hundred and twenty in an acre, extending the planting to the depth of two feet within the water: at the ſame time more kids were put down as before, when and where the water permitted.

In the ſpring, 1791, the Land was conſiderably enlarged: almoſt all the ſets of 1790 grew and flouriſhed, except where the water was too deep. It was then diſcovered much ground had been left by the winter floods, even where no faggots had been made uſe of, by the lodgement of rubbiſh amongſt the ſets; in conſequence of which, we only put down a few kids, but

continued planting as before: at the end of April, or the beginning of May, about two acres, were planted.

In 1792 we found upwards of three acres and an half, which were planted in the ſame manner: we likewiſe diſcovered large beds of ſeedling Oſiers among the ſand and filth collected above and below the Weirs (of the ſame kind as the plants above them), where no Oſiers had been planted: theſe furniſhed us with ſets for the enſuing ſpring. In this year, the plants of 1789 and 1790 were cut for ſets, and planted.

In the ſpring of 1793 the Oſiers planted in 1789 and 1790 were cut for ſale; the ſhoots of which meaſured from ſix to eleven feet in length: the planting was continued as before, the plants of 1791 producing ſets for the ſeaſon: the whole planted this ſpring, amounted to three acres three roods and thirty poles.

The laſt ſpring, 1794, the plants of 1789, 1790, and 1791, were again cut for ſale, and

and produced a fine luxuriant crop, which was ſold at the beſt price.

The Plan herewith tranſmitted, Plate I, was laid down from an actual ſurvey by me taken; to which I beg leave to refer you for the quantity now planted; and the remainder, I hope, in a few years, will be in the greateſt ſtate of perfection.

It appears from the comparative goodneſs of the crops of this plantation, being ſuperior to the old ones in this neighbourhood, that the plants are ſupplied with much nouriſhment from the decay of the kids in which they were planted.

The plants are in general cut to the length of two feet, to ſet upon dry ground, and from two to four feet within the water, thruſt to the depth of about one foot in the ſilth.

I am, SIR,
Your very obedient humble Servant,
WILLIAM CALVERT.

Dalton, near Tuxford.
October 25, 1794.
Mr. MORE.

I DO hereby certify, that I have ſeen the Oſier plantations of Samuel Crawley, Eſq. at Dunham, during the proceſs of gaining them from the River: I think they are in a very flouriſhing ſtate, and have every reaſon to think Mr. Calvert's report to be accurate.

I am, SIR,

Your humble ſervant,

Mr. MORE. GEORGE NEVILL.

THIS is to certify, that, under Mr. Calvert's directions, I have ſuperintended the workmen employed in planting and cutting the holts, or Oſier plantations, of Samuel Crawley, Eſq. below Dunham Ferry; that the land cut the laſt, and this year, was very productive; the rods were of an excellent quality, and fetched the beſt prices; and that the young ones, not yet cut, are in a very thriving ſtate.

I am, SIR,

Your moſt humble ſervant,

North Clifton, WILLIAM CHAPMAN.
October 27, 1794.

Mr. MORE.

The following Accounts and Certificates having been received; the GOLD MEDAL, being the firſt Premium offered for planting mixed TIMBER-TREES, was this Seſſion adjudged to THOMAS RAWLINSON, of Morecambe Lodge, Lancaſhire, Eſq.

SIR,

I WAS favoured with your letter of the 23d of May, 1792, in conſequence of my worthy deceaſed and much-lamented friend, Lord George Cavendiſh, communicating to you my letter to him, on my plantations, and who recommended me to preſent them to the Society for Encouragement of Arts, Manufactures, and Commerce. I now take the liberty to give you an account of the plantations and improvements I have made.

In February, 1791, I purchaſed an eſtate at this place, that had fifty-eight ſtatute acres of common, very much covered with

ſheets of limeſtone rocks, and large limeſtone cobbles; about twelve acres ſo hanging and rocky, not worth half-a-crown an acre, but having moſtly between the rocks one or two feet of ſoil. I concluded to plant it with the hereafter-mentioned trees; and the whole, except about an acre and a half, is encloſed to the weſt, at the top of the hills, with a ſtrong wall, five feet and a half high; and at the foot, to the eaſt and ſouth-eaſt, with a three to three feet and half wall, planted with quicks within; and the acre and half is protected by walls, from any cattle, except ſheep, which are not allowed upon the eſtate. The ſoil is fine brown earth; and the manner of planting was, by taking a ſquare ſod, of about two inches thick, where the ground allowed it, and digging a hole ſufficient for the plant. Particular attention was paid to the Oaks, that there might be plenty of ſoil for the tap; and I have the ſatisfaction to ſay, the whole of the plantations are much better than I flattered myſelf;

ſelf; the dead plants not being, on an average, three to one hundred. Thoſe principally that failed, were the Birches, owing to their coming from a diſtance, and in froſt.

The Larches and Scotch Firs have ſhot greatly, eſpecially the former, which this ſoil and ſituation beſt ſuits; the diſtance in planting is from two to four feet: I commenced planting the 5th of November, 1791, and finiſhed the whole by the 10th of April, 1792. By clearing the land to make the plantation walls, and ſince by encloſing ſeveral fields, and improving by lime and compoſt, I have made forty-one acres, fine, arable, and paſture land; the remaining five acres are in ſheets of rock, or not cleared.

You will, encloſed, receive Mr. Jenkinſon's Certificate, who overlooked the planting; and which is alſo ſigned by Mr. Horrabin, a reſpectable gentleman in this place. I preſume, theſe will be ſufficient for you to lay before the Society, if worthy.

their notice; and refer you to Mr. Jenkinſon for further information, if requiſite.

I am preparing to make a further conſiderable plantation and improvement upon forty-four acres of common I have lately purchaſed, and mean to go chiefly upon Larches, as the moſt encouraging.

I am, SIR,

Your aſſured friend,

THOMAS RAWLINSON.

Morecambe Lodge, Yealand,
Oct. 30, 1794.

Trees planted by Thomas Rawlinſon, Eſq. at Yealand, between the 5th of November 1791, *and* 10*th of April*, 1792.

20170	Aſh,	3900	Elms,
18910	Oaks,	3940	Birches,
2310	Sycamores,	705	Weeping Birches,
2300	Beech,	312	Weymouth Pines,
2010	Spruce Firs,		
2900	Larches,		
3650	Scotch Firs,		

309

300 Huntingdon Willow,	70 Balm of Gilead Trees,
200 Hornbeam,	70 Silver Firs,
110 Pine-aſters,	64 Cheſnuts,
100 Seals,	40 Aſpins,
80 Black Cherry Trees,	25 Walnuts,
	25 Spaniſh Cheſnuts.

62,191 Trees.

SIR,

I HAVE juſt received a letter from Mr. Thomas Rawlinſon, who is now removed to Lancaſter, for the winter; he mentions, that he had written to you in regard to his plantation; and that one Mr. Horrabin, of this place, a gentleman retired from buſineſs, he requeſted with myſelf would certify to you the ſtate of his plantation at preſent. By this, therefore, we aſſure

aſſure you, that we do not in the leaſt doubt that the incloſed catalogue, as given by Mr. Rawlinſon, is juſt. The ground, where he has made his plantation, was for the moſt part of a very trifling value: to many places, ſoil from ſome potatoe-ground was carried, to plant the trees in, among the rocks, which makes the trees grow well. Had the Oaks and Aſhes been planted in cultivated ſoil, it would have added much to their preſent growth.

Very few of the trees have died, ſcarce more than two or three in the hundred, except the Birch, in which plants Mr. Rawlinſon was not well ſerved; but thoſe that live now flouriſh well, as does the Larch, and different ſorts of Fir. Many of the Larches and Scotch Fir have grown this year ſixteen or eighteen inches, ſome more; the Aſh and Oaks that were ſmall plants, as many of them were, do not ſhoot much; numbers have loſt part of their tops, and ſhoot out below; but as they gather ſtrength, or are cut off below the dead part, there is little doubt

doubt but they will ſoon flouriſh. A trial of cutting them off a little above the ground was made on a few this ſpring, which anſwers well; the ſtrong plants with the Sycamore do very well with the other plants.

We are yours moſt aſſuredly,

RICHARD HORRABIN.
JOHN JENKINSON.

Yealand, Oct. 30, 1794.

Mr. MORE.

The

The Thanks of the Society were given to THOMAS SKIP DYOT BUCKNALL, Eſq. for the following Communication relative to ORCHARDING, which may be conſidered as ſupplementary to his Papers on the ſame ſubject, already publiſhed in the Eleventh and Twelfth Volumes of theſe Tranſactions: and the Society, convinced that it will be of great advantage to have the Orchards in the ſeveral parts of the Kingdom brought to the higheſt poſſible degree of perfection, have this year offered very conſiderable Premiums for that purpoſe. See Claſſes 74, 75, 76.

SIR,

I BEG you will convey my beſt acknowledgements to the Society for the Encouragement of Arts, Manufactures, and Commerce, for the regular attention they have been pleaſed to ſhew to the Papers I have

have had the honour to lay before them, on the ſyſtem of Cloſe-Pruning and Medication, as expreſſed in my letters, inſerted in the Eleventh and Twelfth Volumes of their Tranſactions; and for the very handſome Premiums offered by them, in conſequence of thoſe communications: and I hope, like the other uſeful branches, which have been at firſt foſtered, and then brought to perfection by their attentive care, this will produce elegance throughout the plantations of Fruit-trees in the Kingdom, and general good to the community at large.

In this I will add ſuch further hints as may conduce to guard the planter from diſappointment. Let it be obſerved, I do not retract in the leaſt the ſtreſs I before laid on ſhelter, nor the neceſſity of the ſoil being well choſen, with proper aſpect.

It is generally imagined, that when the trees are planted, the troubleſome part of forming an Orchard is over: but the fact is far otherwiſe; for a greater difficulty remains, which is, to determine what pro-

per uſe to apply the ground to; for if it is cultivated by the plough, little good can be expected; for the injuries which young trees conſtantly receive from implements in huſbandry bruiſing and deſtroying them before they can have got full poſſeſſion of the ſoil, generally hurts them moſt eſſentially; and if, by a ſuperlative care, they ſhould ſurmount the evils ſo brought on, the crops of corn being regularly carried off the land, impoveriſhes the ground ſo much, that the trees are ſoon ſtunted, and run to moſs.

There is not any culture we are acquainted with, equal to hops, for raiſing an Orchard; and when the proper time comes for grubbing up the hops, the trees may be ſecured, and the land turned to grazing. However, let the agriculture be what it may, the land ſhould never be ploughed, or dug deep, directly over the roots of a young-planted fruit-tree; for as the roots collect their beſt benign ſap from their extreme points, if thoſe points are broken off from

the upper ſide of the roots, that tree is compelled to ſubſiſt on nurture drawn from the under-ſtrata, and conſequently the ſap will be of an inferior quality.

It may be regularly obſerved, that, where trees ſtand in ſuch a ſituation, that the hogs and poultry are conſtantly running over the ground, thoſe trees very ſeldom fail of a crop, which is the beſt proof that manure is neceſſary; and any manure will ſuit an Orchard: but there are ſeveral ſorts of manure which are overlooked, ſuch as the ſweepings of cowhouſes, ſlaughterhouſes, emptying of drains, and every thing filthy; and theſe are more diſpoſed to facilitate the growth and health of fruit-trees, than the manure from the ſtable.

An eſſential circumſtance to be attended to is, that the fruits be ordered of thoſe ſorts which thrive in the neighbourhood where the plantation is intended to be made, and a ſtrict regard ſhewn to that purpoſe, as the beauty and value of the whole Orchard will greatly depend upon the

the trees being well ſuited. There is a ſtriking inſtance of this at Sittingbourne, and its neighbourhood: the lemon pippin is invariably a fine thriving tree, and the ſummer pearmain as conſtantly ragged and out of health; and this obſervation may be applied throughout the whole range of fruit-bearing trees, according to the ſoil and ſituation.

The ancient Orchards of Kent, which were moſtly grubbed up about fifty years ſince, produced the Kentiſh pippin, lemon pippin, ruſſet, cat's-head, and other hardy-keeping fruits; but as the age refined in luxury, the more delicate apples were introduced. The ſharp north-eaſt winds, in many ſituations, were certainly too ſevere for theſe productions: though I entertain no doubt but this appearance of a caprice or particularity in nature, may by attention be in part corrected, though any attempt to point out the cauſe would lead me too far from the preſent ſubject.

Care

Care ſhould be taken, not to ſuffer trees to bear much fruit while young: it ſhould be gathered as ſoon as ſeen, except about half a dozen, to ſhow the ſize and quality. The young trees being kept clear, will give them, if I may uſe the expreſſion, the habit of producing larger and finer fruit: but that is not the material reaſon; by being kept clear, the leading and collateral branches run ſtronger each year; and be aſſured, if the tree can be brought to a proper ſize, there will be no doubt of its bearing afterwards. Obſerve among thoſe gentlemen who pride themſelves for being maſters of fine ſtock, either horſes, cattle, or ſheep, and you will find, the governing principle with each of them, is to run the young ſtock to as *long bone* as poſſible in the firſt year; knowing, from experience, that having once ſecured bone, fleſh, figure, and ſymmetry will follow. Such trees as ſuit the ſoil may, by eaſy means, be induced to grow to a ſize beyond what we imagine: let the land be grazed or manured, and

gather the fruit before it can be applied to any uſe. How long this cuſtom ſhould be continued, each Orchardiſt muſt judge for himſelf; but no one will have the leaſt chance for the prize, who does not take off the fruit for ſome time at leaſt.

There is no impropriety in deeming the heads of fruit-trees, as ſo many hemiſpheres: only ſuppoſe it poſſible, by any art, to induce each of the branches of one tree to grow two inches longer than thoſe of another tree in the ſame year; that free-growing tree will, in eighteen years, double the head of the other: ſo much for ſize. Health is the certain conſequence.

No young plant, or newly-engrafted tree, ſhould be ſuffered to run *mop-headed*; for until each branch has acquired a determined leader, that tree will make no progreſs; and a tree, like an animal, if it takes a ſtunt, it is difficult to throw ſuch energy into the ſyſtem afterwards as will make it free-growing.

It

It has been objected, that if no leading branches are to be ſhortened, the nurſery-man could not form the ſtems to ſupport the head.

Undoubtedly, while the plants are in the nurſery, the ſlighteſt practitioner knows that the head muſt be cut down, to give ſtrength and ſymmetry to the ſtem; and it is alſo neceſſary that moſt of the grafts be ſhortened, or the wind will blow them out; and during the time the plants are in an infant ſtate, ſhortening helps to ſwell out the buds. It was never meant to exclude ſhortening, until the plant was become a tree; and it is perfectly within the nurſery-man's art to produce all his ſtandard fruit-bearing trees with ſtems large and ſmooth, buds full and round, and leaves broad and open, without the tree being liable to canker, or gum; and this is given as the character of a perfect and valuable tree.

Moss.

One of the greateſt obſtructions to good Orcharding is Moſs, which is merely the

reſult of poverty and neglect, reflecting a diſcredit on the owner. Where trees are much overrun with Moſs, a ſtrong man with a good birch-broom, in a wet day, would do great execution. But to enter more into the buſineſs, what is Moſs? a plant; and, like other plants, may be eradicated on the firſt appearance: for that purpoſe, on young trees, the beſt method is to rub all the branches, ſpring and autumn, with a hard ſcrubbing-bruſh and ſoap-ſuds; and the action of rubbing will ſo far invigorate the tree as to overpay both trouble and expence. There is no damage can befall the tree from rubbing; and let it be performed as a groom does a horſe's legs.

Certainly the beſt ſoil to plant on is a fine deep loam; and no one, for profit, would think of planting on a ſtrong clay, chalk, or a cold ſharp gravel: but where a gentleman, for the embelliſhment of his reſidence, would wiſh for an Orchard on either of theſe ſoils, never dig into the under-ſtrata; for that would

would be placing the trees in ſo many well-holes, where certain deſtruction muſt enſue: therefore, rather plant the trees above-ground, raiſing over it a little mound of good freſh mould, about as large as an extenſive ant-hill, under a curve of eight inches by ſixty, and ſow the top with white Dutch clover.

CANKER.

In pruning, the medication ought never to be omitted; for, from experience, the mercury is found to be ſo ſtrongly operative in removing the baneful effects of Canker in the more delicate fruit-trees, that it may be preſumed to enter into the economy of the plant, giving a ſmoothneſs to the bark and freeneſs of growth; proofs of which will be produced to the Society in a few years, by perſons who have attentively conſidered the ſubject.

I ſhall here give an abſtract of the ſyſtem of cloſe-pruning and medication, as before

laid down, that it may be ſeen at one point of view.

Let every ſtump, the decayed or blighted branches, with all thoſe which croſs the tree, or where the leaves curl, be taken off ſmooth and even; pare down the gum cloſe to the bark, and rather a little within, but not to deſtroy the rough coat; open the fiſſures, out of which the gum oozes, to the bottom; cut away the blotches, and pare down the canker; then anoint all the wounds with the medication, ſmearing a little over the canker, which was not large enough to be cut; ſcore the tree, and rub off the moſs; but do not ſhorten a ſingle branch: follow the ſurgeon's rule, go to the quick, and no more; act with obſervation, and each practitioner will improve the ſcience.

A tree under ſuch care, muſt, with its remaining free ſhoots, run large, which requiring a great flow of ſap, will keep the roots in conſtant employ, and from that very ſource neceſſarily eſtabliſh permanent health.

SIR,

IN this public manner I desire of you to accept my thanks, and assure the Society they will always command my best regards.

Your humble servant,

THOMAS SKIP DYOT BUCKNALL.

Hampton-court,
April 20th, 1795.

P. S. Where the only object is to remove the canker, I find hog's lard preferable to tar; but where the wet is to be guarded against, tar is superlatively better.

The Thanks of the Society were given to WILLIAM HAMPSON, Eſq. for the following Communication on the ſubject of DESTROYING INSECTS in ORCHARDS, &c. which is here inſerted as ſerving to confirm the doctrine laid down in the foregoing Paper on Orcharding, by Thomas Skip Dyot Bucknall, Eſq.

SIR,

BY laying the encloſed paper before the Society for the Encouragement of Arts, Manufactures, and Commerce, you will oblige,

SIR,

Your moſt obedient ſervant.

WILLIAM HAMPSON.

Dewſnop, in Duckenfield,
near Mancheſter.
Feb. 11, 1795.

On

On the Means of preventing Caterpillars on Fruit-trees.

IT will not appear foreign to the ſubject, if ſome general obſervations which are well known to thoſe who have the management of fruit-trees, and more particularly the apple, precede an account of the means here diſcovered for preventing the deſtruction often occaſioned by the ravages of the Caterpillars. 1ſt, A winter, in which there is a ſevere froſt for a long continuance, is accounted favourable to the ſucceeding fruit-harveſt. 2dly, Young and healthy trees, which are continually diſtending the rind, and putting forth vigorous branches, are not often attacked with the Caterpillars; or if they are, it is when the foliage of an aged or ſickly neighbour is exhauſted, and then being urged by want of food, the worn throws out its ſilken line, which, carried by the wind, clings to the branches of another tree, and by this means it effects a paſſage.

Some-

Some time ago, having an intention to improve a number of apple-trees, which, owing to their being yearly infeſted with the Caterpillar, had been long neglected, I began in the following manner. It being early in the ſpring, I firſt cauſed the thick brown moſs to be removed from the trunk of the tree, around which, but at a diſtance equal to the extremities of the roots, I ſpread warm rotten litter; and then, with the back of a pruning knife, ſcraped off the livid-coloured moſs with which the branches of the tree were entirely encruſted. But what ſurpriſed me, and to which I would beg particular attention, was, that ſmall detached pieces of moſs hung upon the bough by fine threads, after it had been cleaned: this led me to think they belonged to ſome eggs or inſects which lay concealed between the moſs and the outer bark, or between the outer and the inner rind; but being then without the help of glaſſes, my curioſity remained unſatisfied, although the effects diſcovered in the opening ſeaſon juſti-

juſtified my ſtrongeſt apprehenſions; for thoſe trees which had been thoroughly cleaned, put forth ſtrong and healthy ſhoots, and retained their leaves; when others, their neighbours, were eaten up: yet what convinced me beyond the leaſt doubt, was a tree which through negligence had been left in part cleaned; the boughs which I had cleaned were untouched by the Caterpillar; on the contrary, the leaves of thoſe boughs I had not cleaned, were ſoon conſumed by them.

Theſe facts being ſtated, the following remarks are naturally ſuggeſted. Firſt, that the eggs of the Caterpillars lie, during the winter, concealed in ſuch trees as are overgrown with moſs, between the moſs and the rind, or, where the rind is decayed, in the cavities occaſioned by ſuch decay; a circumſtance which, with the aſſiſtance of a microſcope, I have ſince aſcertained: but through mere neglect, having not preſerved the eggs for future obſervation, I cannot ſay determinately they were the eggs of the

Cater-

Caterpillar; but this I can ſay, that the removal of thoſe eggs prevented the leaves of the tree from being eaten. Secondly, that the proper time for deſtroying them would be before the eggs are hatched; for, by the time the Caterpillar is come out, the buds begin to open, and of courſe become its immediate prey; and as the butterfly-tribe are ſo numerous and ſo perfectly free from reſtraint, the nature of the caſe will require an annual ſearch to be made in ſuch places as are thought favorable to them for depoſiting their eggs: there will be often found full-grown trees, which by being encumbered with branches, the power of the ſun is not admitted to ſhrivel the old rind as the new one is forming; conſequently ſuch trees become encruſted with decayed coats, the fit receptacles for preſerving the embryo Caterpillars; and ſuch trees whoſe wounds have been ſuffered to heal, ſo as to form an hollow, retaining moiſture, which cankers the wood, and renders it eaſily perforated by the fly, are likewiſe lia-

ble to become a prey to the inſects they have preſerved.

The above obſervations are offered as hints only, on a ſubject capable of deriving more advantage from thoſe who enjoy greater opportunities to inveſtigate, and ability to inform, than what has fallen to to the lot of their author; and it is with this preſumption they are offered to a Soeiety, the members of which have it in their power to employ them to the beſt advantage, namely, that of the public good.

The

The following Account and Certificate having been received; the GOLD MEDAL, being the firſt Premium offered for the Culture and Cure of the TRUE RHUBARB, was this year adjudged to Mr. JOHN BALL, Surgeon, of Williton, in Somerſetſhire; whoſe former Papers on the ſame ſubject are inſerted in Vol. XII. page 229.

THIS is to certify, that Mr. John Ball, Surgeon, of Williton, in the pariſh of St. Decumans and county of Somerſet, has cured this year ninety-ſeven pounds of the Rheum Palmatum, or true Rhubarb, of his own growth; and, as he believes, equal to ſuch as is commonly uſed or known by the name of Turkey or Ruſſia Rhubarb; and that the whole is of the ſame

ſame goodneſs with the five pounds ſent herewith as a ſample.

HUGH TORRINGTON, Churchwarden.
JOHN PULMAN, } Overſeers.
JAMES WOOD, }

The Culture as follows.

I ſow the ſeeds about the ſecond week in February, in drills ſix inches apart, and one inch deep, upon beds of three or four feet: if the weather ſhould prove mild, the plants will appear in a fortnight or three weeks; and if it is a dry ſeaſon, I give them moderate waterings; if too thick, thin them from two to three inches; and when about four inches high, tranſplant them where they are to ſtand, from four to ſix feet from each other, in a deep ſoil, well manured with good rotten dung, ſifted coal-aſhes, and lime previouſly ſlaked, and mixed with a proper quantity of mud, or waſte from a mill-pond, or with earth from the guttering of meadows. I keep them free from

weeds, and, if occaſion, give them moderate waterings; am particularly careful to keep them free from ſlugs, they being exceedingly fond of the tender plants, and would ſoon deſtroy them, if not attended to; for which reaſon, I generally look over the plantations every night about eight o'clock, and take them away, and ſo continue until I find the ſlugs are all deſtroyed, and the plants have taken good roots.

For theſe two years paſt, I have ſown ſeeds in September; and the firſt week in October they came up, grew exceeding well, and made good roots, fit to be tranſplanted in the laſt week in February or beginning of March; and am of opinion, that this is the beſt time for ſowing them.

The Method of Cure.

I take the roots up, upon the ſtalks withering or dying away; clean them with a dry bruſh, and cut them in ſmall pieces; ſtring them on a packthread, keeping every piece apart, and hang them acroſs poles fixed

fixed to the cieling in a kitchen, where there is a conſtant fire; which I now find to be much ſuperior to the open air and ſun (which had been my uſual method for theſe ſeveral years paſt), not having had one rotten or moulded piece this year.

The following Account and Certificates having been received; the firſt Premium, being the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS, at the option of the Candidate, was this Seſſion adjudged to MR. HENRY HARPER, of Bank-Hall, Kirkdale, Lancaſhire, for improving Seventy-five Acres, of Eight Yards to the Rod, of WASTE MOOR LAND. This Candidate made choice of the SILVER MEDAL and TWENTY GUINEAS.

An Account of the incloſing and improving ſeventy-five acres, of eight yards to the rod, the whole of Bootle Marſh, for which I agreed with the proprietor for a leaſe for twenty-one years, and by the agreement was to incloſe and improve all the improvable land, according to a plan drawn up for that purpoſe; and to find all gates, &c. pay all taxes, that it may be charged with during the leaſe.

THE ſoil a white poor ſand, adjoining the ſea-ſhore, along the River Merſey, which

which empties itſelf into the Iriſh Sea: the weeds it produced, chiefly poor friz, gorſe, and bent: the value of it, and another marſh, called Linecre-Marſh, was thirty pounds a year, which amounted to four ſhillings and ten-pence per acre, of eight yards to the rod; on which they kept a few half-ſtarved cattle, and the gorſe chiefly cut and ſold to perſons who ſent it to Liverpool, where it is uſed for ſweeling ſhips*. I had them both together for three years, for the thirty pounds a year; and then Linecre-Marſh went from me; and I was, by the agreement, to give ſixty pounds a year for my leaſe of Bootle-Marſh only.

I agreed for it in the year 1778; and then I began incloſing and improving, and finiſhed all the improvable land in the year 1780.

Marling was the firſt improvement, at the rate of ſix rods and a half per acre, each

* After a ſhip's bottom has been paid with tar, fat, &c. a flame from a tar-barrel or gorſe is expoſed to the ſurface, to melt it ſo as to run into the ſeams.

rod containing sixty-four cubical yards; then dung according to the crops taken. The first crop taken was wheat, on the driest parts, with once ploughing; sown broad-cast, and no dung; produce, five quarters per acre. The first crop taken from the parts not quite so dry was barley, ploughed three times, sown broad-cast, with a little dung; produce, seven quarters and a half per acre; skim-fallowed before marled. The wettest part, oats, sown broad-cast, with once ploughing; produce, eight quarters per acre. When the seasons have been dry in May and the beginning of June, the crops have been light, and in some places all burnt up; but when the month of May and the beginning of June have been showery, the crops have been good.—The general averages have been,

	Qrs.
Wheat, from a summer fallow,	8 *per acre.*
Wheat, from clover, ploughed one, two or three times, or from a clean stubble of white corn,	6 ditto.

Barley,

	Qrs.
Barley,	7 *per acre.*
Oats,	8 ditto.

Clover, three tons per acre.

The Size of the Fields.

	A.	R.	R.
New Close,	10	2	2
Big Marsh, Delf Field,	19	1	36
Bull Field,	5	0	0
Little Field,	2	3	36
Land-mark Field,	8	1	15
New-mill Park,	5	2	33
Little Croft,	0	0	30
Corner Croft,	0	2	32
Lower New Close,	5	0	37
	58	0	21 at

Twenty-two pounds fourteen shillings and one penny per acre, is £.1316 16 10

Unimprovable, but inclosed.

Lower Marsh,	5	0	0
Long Marsh,	11	3	19
	16	3	19

Expence of inclosing	25
Total expence on seventy-five acres,	£.1341 16 10

The fences are cop, and ditch, five feet wide at top, two feet and a half deep, and two feet wide at bottom; cop, four feet high. About one half of the fences is gorſe ſeed ſown in a drill near the top of the cop; and where it comes on, it makes a good fence: the other half is poſts and rails ſet on the top of the cop.

The average value of the fifty-eight acres twenty-one perches, laid down for graſs, is now two pounds fifteen ſhillings per acre, of eight yards to the rod: I have marled ſixteen acres of it a ſecond time, at the rate of eight rod to the acre; which anſwers every expectation I had formed of it. Till Mr. Holt, the Surveyor of Agriculture for Lancaſhire, informed me, I did not know there was ſuch an inſtitution as the Society to whom I now addreſs myſelf, or I might have ſent the account before this time; and Mr. Holt thought ſuch an improvement ſhould be more known.

HENRY HARPER.

Bank-Hall, Kirkdale,
Nov. 26, 1794.

Mr. MORE.

WE have been well acquainted with the land above mentioned, both before and after Mr. Harper's improvement, and believe the account given to be true and juſt.

HENRY HEATHCOTE, Rector of the Pariſh of Walton on the Hill.

JOHN HOLT, Surveyor of Agriculture, for the County of Lancaſter.

The SILVER MEDAL and EIGHT GUINEAS were this Seſſion voted to Mr. JOHN JENKINSON, of Yealland, in Lancaſhire, for his IMPROVEMENT of LAND, allotted to him on the Incloſure of the Commons in that part of the County, as deſcribed in the following Papers.

DEAR FRIEND,

THE many rewards the Society for the Encouragement of Arts, Manufactures, and Commerce, have held forth to the Public, have been of great ſervice; and your politeneſs in encouraging me to offer myſelf a candidate for their favour in the agricultural line, makes me preſent the following particulars to you; which, if they ſhould merit the Society's notice, will give the greateſt pleaſure to your moſt aſſured and reſpectful friend,

JOHN JENKINSON.

Yealland,
Oct. 27, 1794.

Mr. MORE, BY

BY virtue of an Act of Parliament, we began the incloſure of the Commons within the two Yeallands, in the north of Lancaſhire, ſixteen years ago.

The allotments which the Commiſſioners aſſigned to me, were in three places; two not inconvenient to my houſe; the third, near ſeventy acres, about three miles diſtant. The whole, one hundred and ſix acres.

The ſoil, where not rocky, is in general a good hazel mould; ſome rather loamy in the diſtant lot; none ſandy or gravelly. Many of the plaineſt and beſt parts produced, in abundance, the common braken, or bracken; and in moſt places were great quantities above ground of ſingle lime-ſtone rocks of all ſizes; the largeſt ſort required to be ſeparated by gunpowder, before they could be removed, or the land ploughed.

Being fully convinced that the common in its natural ſtate would not anſwer any good purpoſe, I immediately began to let off ſeveral parts, to be cleared of the ſtones; which

which, when broken up, made good fences of them to divide my allotment into fields, and ſeparate them from my neighbours. By this means my land was cleared, and I got good fences.

To bring the land into cultivation, various methods were tried, but paring and burning ſoon became the general mode, in the firſt inſtance, for a crop of rye or oats; which ſcarce ever fails. In my ploughing among the brackens, I gave orders to plough with a good hold, in order to break the roots: one perſon, willing to do his buſineſs with more eaſe than judgment, ploughed ſhallow: his crop ſuffered greatly by the brackens; the trial cured him: the brackens run their roots like a net a few inches below the ſurface, which ought to be broken by the plough.

Some others as well as myſelf, after paring and burning, ſowed wheat or barley; but the crops did not anſwer. Turneps anſwer equally well as rye or oats: I alſo tried ſummer fallowing in the firſt inſtance,

tilling

filling the ſame with a compoſt of lime, earth and dung; the crop of wheat good, and the next crop better than the ſecond, after paring and burning.

In many places, we planted quickſet fences, where not too much expoſed to the ſea-wind; the ſides of the ditches or banks made of ſtone about three feet high, the inſide filled with earth, in which the quick-ſets were planted: at firſt I ſet the ſtone-walls on the ſurface, but ſince found it much better to take the earth out a ſpade deep: it makes the wall ſtand firmer, and the earth thrown out ſerves for a compoſt.

The two allotments near home being divided into fields, the parts moſt free from ridges and beds of rocks I cultivated and broke as before mentioned; but the part ſituated among the ridges and beds of the lime-ſtone rocks, and not capable of being ploughed with any degree of eaſe or profit, I covered with lime or compoſt. Both ways anſwer well; but a good compoſt of earth, lime and dung, I prefer to lime alone: lime

lime itſelf, I ſet on at about ſix yards to the buſhel of twenty-four gallons.

My other lot, at a diſtance, I kept a few years in my own hands, dividing it into fields, and bringing it into cultivation; ſince which I have let it, and built a houſe and barn thereon: one place, of about ſeven or eight acres, being moſtly rocks and brush-wood, made out for a wood: in the firſt place, cut the natural wood, moſtly hazle, for it to ſpring afreſh: in the vacancies I planted ſeveral thouſand trees, nine or ten years ago; the birch and alder (or what in this country is commonly called the eller) grow well; but the aſh and oak get forward very ſlowly, though now they begin to grow more freely. The ſituation not very favourable, being much expoſed to the Weſtern Ocean, or rather the Bay of Morecambe.

In my allotment near home I have planted at leaſt a dozen ſmall plantations of trees, in which the Scotch Fir anſwers beſt: the Spruce I find the worſt; it will do

do nothing, except in a very ſheltered ſituation: the Larch is the quickeſt grower, but, if expoſed to our weſterly wind, little better than the ſpruce. In one plantation I planted the Sycamore to the weſt; but the Scotch Fir ſtands better.

The method I took to deſtroy the brackens in the land not ploughable, was, for ſeveral years after the incloſure, to mow them twice in a ſummer, which has ſo effectually annihilated them, that now a boy would carry the growth of ſeveral acres on his back.

Courſe of Crops in general.

1ſt. If a dry ſpring, that the paring can be got burnt, early oats, if not rye, at Michaelmas.

2d. Late oats, or barley, if manured, ſown with clover.

3d. If oats laſt year, then moſtly ſummer fallow; but I prefer turneps, then oats or barley.

4th. Wheat.

5th. Oats, or barley.
6th. Clover, white or red; if red, break up after one year for oats; ſome after two, but not ſo well.

N. B. Taking up the commons did not leſſen the value of the old incloſures, ſo that what the proprietors of land got for their common-right was clear gain.

We believe the above is an exact account,

JOHN FORD.
JAMES JENKINSON.

Lancaſter,
October 20, 1795.

The

The SILVER MEDAL was this Seſſion voted to Mr. JOHN MIDDLETON, for the following Communication relative to the Culture of CLAY SOILS.

SIR,

AS the cultivation of Clayey Land in a ſtate of aration is confeſſedly leſs underſtood, than the management of turnep and barley land (ſandy land), I propoſe it ſhall be the buſineſs of this paper, to point out a method of doing it with nearly equal facility, and with more profit, than is uſually done by the beſt methods now practiſed on ſandy lands; and that the courſe ſhall be calculated to completely annihilate the ſyſtem of fallow years, by the adoption of a four-years courſe—of, 1ſt, winter tares;—2d, oats;—3d, clover;—4th, wheat.

Tares have not been eſtimated ſufficiently high in any account that has yet come

come under my eye. Valuing them as green food at about the price of turneps, at thirty, forty, or fifty ſhillings an acre, does not by any means do them juſtice: they are convertible into hay, generally containing as much food, and better in quality than the beſt meadow.

Not many perſons grow them; and thoſe who do, have uſually had only an acre, or two or three, giving them green to horſes; and the remainder, when any, perhaps half an acre or an acre, made into hay, though more generally ſtanding till they are ripe, and threſhed for their ſeed.

The method which I am now recommending is, to ſow tares over one fourth part of all the tenacious arable land of a farm; and let them be nearly the whole, or the only food given to the farmer's ſtock, as long as they will eat them without waſte, which will be until the tares begin to decay at bottom. Mow all the reſt when the pods begin to form, and make them into hay: a pretty good crop will produce three tons per

acre,

acre, equal in quality to ſainfoin, and ſuperior to every other; uſually worth twenty ſhillings a load above the price of the beſt meadow hay, made or cured equally well.

I had about eighteen acres of winter-tares laſt ſummer; fed ſix, and made twelve into hay, containing full thirty-ſix loads, worth five guineas each, or fifteen guineas per acre, in the ſaving meadow hay and corn, which ſeems to me to be a correct method of eſtimating the value of tare and clover crops.

As faſt as the ground is cleared of tares, to the extent of about an acre, let it be ploughed; and as ſoon as the whole field is thus cleared of tares and ploughed, let it be harrowed, reploughed and harrowed, the couch repeatedly picked and burnt, till it be rendered clean as the beſt fallow could make it; and while it is dry, before the autumnal rains ſet in, plough it into ridges that are beſt calculated for keeping it dry (I eſteem thoſe ridges of the beſt ſize for this purpoſe, that are about three feet wide, and made by two bouts of the plough):

water-furrow it, and thus leave it through the winter, until oat-ſeed time, at the earlieſt period of which harrow in oats and clover; the crops of both will be abundant.

I here recommend weeding the clover, and all hay-crops, about a fortnight before mowing time: the quantity of ſmother will deſtroy ſome of the weeds, and check all the reſt.

The oats being reaped in the ſecond year, and the clover mown once or twice in the third; plough in ſeed-wheat, covering it by a thin and narrow furrow: and note, that here again I prefer its being done into ridges of three feet wide, made up by two bouts of the plough, which, I think, ſecures a quicker and more perfect drainage than can be done by ridges of any greater width. The water-furrows being well opened, the whole will be dry through the winter, and in due time there will be a plentiful crop of wheat.

The wheat being reaped, manure all its ſtubble; and in September plough in tares, covering them by a thin and narrow furrow.

The

The ploughings are given the land in a dry ſtate during the ſummer: all winter, ploughing, treading the ground in wet weather, and poaching it, is, as it ought to be, entirely avoided.

Having thus gone through my four years courſe, it is hardly needful to obſerve, that it is calculated to keep the land clean, and to inſure one valuable crop in every year.

I have prepared an account of the expences, produce, and probable profit; but every eſtimate of that kind is too local for general information: ſuffice it, that with me the produce is twelve pounds, my expences ſix pounds, leaving ſix pounds per acre for rent, taxes, tithes, riſks, intereſt, and profit.

I am, SIR,

Your moſt obedient ſervant,

Weſt-barn Farm, Merton.
Dec. 29, 1794.

JOHN MIDDLETON.

Mr. MORE.

IN conſequence of a letter written to Mr. Middleton, requeſting him to inform the Committee of Agriculture, What was the ſtate and value of the land he mentions, previous to his managing it in the manner he deſcribes? the following anſwer was received.

SIR,

THE land was occupied by a bad farmer, who held it under a leaſe which allowed him to take three crops of corn in ſucceſſion, and then to fallow; and was, as farms uſually are at the expiration of the leaſe, foul and exhauſted.

I am, SIR,

Your very humble ſervant,

JOHN MIDDLETON.

Paradiſe-row, Lambeth,
Feb. 16, 1795.

Mr. MORE.

The

The Thanks of the Society were given to RICHARD RAMSDEN BRAMLEY, Eſq. of Leeds, for the following Communication, relative to the CULTURE of LANDS in the Neighbourhood of Great Towns; and in conſequence of the expreſſion near the concluſion of his Letter, in which is mentioned, that a large Quantity of Land is likely to come into his hands, he was informed, that any future Communication will be highly acceptable to the Society.

SIR,

READING lately with attention the publication of the Patriotic Society of which you are Secretary, and thinking a mode of Farming uſed here not yet noted, I take the liberty of ſtating it as applicable in the ſame manner, near moſt towns where the meadow or paſture land is overrun with coarſe, ordinary graſſes; or is, in its form, or from neglect, rough and uneven: our

practice here, is, in ſuch caſes, to agree with a gardener for planting the land with potatoes.

The proceſs is, firſt paring, then to dug out a ſmall trench, in which the firſt row of ſets is placed, and then covered by a ſpade's-graft of earth; thus burying the ſurface in continuance, and on which the potatoes are planted with a dibble. The decaying ſods ſerve as a nutriment to the riſing crop, and keep the ſoil light. The gardeners plant the early, or ſecond early potatoes, as paying beſt for immediate uſe; and can afford to give from five to ſeven pounds per acre for the uſe of the land, at the ſame time engaging to keep the ſame well hoed, and to have the crop cleared off in Auguſt.

The ground ſhould then be completely cleaned by ploughing, harrowing, &c. and in the enſuing ſpring ſown with oats or barley; after which, the quantity of ſixteen buſhels of hay-ſeeds, and ten pounds of white clover ſeed, per acre, ſhould be ſown

and

and harrowed in. The crop of corn may be expected good, and nearly with a certainty, in conſequence of the fine tilth of the land; the ſame expectation may be had of the graſs-ſeeds, if they have been properly ſelected. The laſt year, when crops were not generally abundant, on leſs than one acre and three roods, I had eighteen quarters and two buſhels of fine oats, and the promiſe of the graſs ſuch as to ſatisfy the moſt ſanguine hopes; not a vacancy of ſix inches ſquare, if one of three can be found on the whole field, and the crop likely to be from two to two and half tons per acre. As this mode is purſued, not for its paying much preſent profit, but its actual future improvement, and the embelliſhment of the ground, I remark an error which has occurred, by trying (immediately after the potatoes were off) to clean completely and lay down the field with ſeeds: near to a town where land lets dear and manure is eaſily attainable, the general cuſtom is not to be ſparing thereof; and

with the freſh dung ſo many of the ſeeds of weeds get introduced, as chickweed, fumitory, fat-hen, and perſicaria, that laid down (after potatoes) with graſs-ſeeds only, its groſſneſs forces up ſo large a quantity of thoſe weeds as to half ruin the firſt crop; which evil is in a great meaſure prevented by the practice of ſowing corn the ſucceeding ſpring, and with it the graſs-ſeeds: the corn thus keeping the weeds out of ſight, and preventing them from ripening their ſeeds, admits the regular graſſes to get ſo good root-hold as to prevent any future intruſion; and no manure ſhould be laid on till the graſs-ſeeds have nearly covered the ſurface, as then there is litle reaſon to fear the weeds ſuch manure might otherwiſe introduce. A ſpeculative farmer (myſelf), with my wheat laſt year, I laid down twenty-three acres with graſs-ſeeds, ſixteen buſhels to the acre, and in the month of April added ten pounds of white clover ſeed per acre: the ground was in fine condition, and the crop of wheat, which at one period promiſed forty

forty to forty-five buſhels per acre, yielded, in conſequence of the ſeaſon, only about thirty-two buſhels per acre; but the ſward has the moſt promiſing appearance, and I think a preference to the graſs-ſeeds ſown with ſpring crops. Of courſe, where opportunity offers, it is a good mode to follow, and, as ſuch, worthy of recommendation. I had purpoſed giving an account of the management of about forty acres of new incloſure; but ſeeing, in the papers of this day, the Agricultural Society's recommendation of potatoes, I thought this mode of introducing that uſeful root might add an additional ſtimulus where it has never yet been practiſed. The paring and digging, which coſts here three pounds twelve ſhillings per acre, gives ſo decided an advantage in the crop by lightening the ſoil, that it is thought to pay the additional expence, and is an uſeful ſource of employment: the ground is afterwards fit for carrots, cabbages, or onions, if ſuch crops are wiſhed for, and any inequalities in the ground are by this means ſoon remedied.

It will give me pleaſure to learn that theſe thoughts may be deemed uſeful; and it is probable that ſome future experiments to be made on a purchaſe of three thouſand five hundred acres (which will ſoon come into my power) may be worthy of communication. Should they prove advantageous, I ſhall be happy in giving an account; and am, with beſt wiſhes for the Society's ſucceſs,

SIR,

Your moſt obedient ſervant,

RICHARD RAMSDEN BRAMLEY.

Leeds,
Feb. 9. 1795.

Mr. MORE.

The

The Thanks of the Society were given to Mr. JOHN LOCKETT, of Donnington, near Newbury, for his Communication, relative to a Method of increaſing POTATOES, as deſcribed in the following Paper.

SIR,

HAVING lately ſeen in the news-papers various methods propoſed in order to increaſe and multiply Potatoes in the moſt effectual manner, I take the liberty of ſending you an experiment which I have repeatedly made; alſo a method to procure Plants in a very cheap and eaſy way; not after ſuch as the preſent winter, but after a mild winter, when the froſt has penetrated but a ſmall diſtance below the ſurface of the ground.

Firſt, as to the experiment; I took three potatoes, the 17th of December,

1793,

1793, and put them in a ſmall caſk, and placed the caſk in a cellar: the 10th of March, I took off fifteen ſhoots from them, and planted them with a ſetting or dibbling ſtick, in the ſame manner as cabbage plants, about one foot ſquare: the 16th of April, I took twenty-one more ſhoots from the ſame three potatoes, and planted them as before: on the 22d of May, I took twenty-five ſhoots more, and planted them alſo, and then waſhed and boiled the ſaid three potatoes, which proved very good to eat. I had, from the ſaid ſixty-one ſhoots, as many potatoes as weighed ninety-two pounds, notwithſtanding the rooks did me much damage.

My method of procuring plants after a mild winter, is to go (about the month of May) over the fields where potatoes were planted the preceding year, and pull up from among the corn all the ſhoots produced by the potatoes left in the ground the preceding autumn which had eſcaped the digger; and

plant

plant theſe ſhoots in the ſame manner as above, viz. the ſame as cabbage plants.

I am, SIR,

Your very humble ſervant,

JOHN LOCKETT.

Donnington,
March 1, 1795.

Mr. MORE.

The

The Thanks of the Society were this Seſſion given to Mr. WILLIAM RANDALL, the Author of the following Paper, reſpecting the FORMING OAKS into COMPASS SHAPES, for the Uſe of Ship-Builders: and the Society, in conſideration of the great advantages that may reſult from having Oaks trained in that manner, have offered Premiums for growing Oaks in Compaſs forms, for the Uſe of Ship-Builders. See Claſs XVII.

SIR,

I MUST firſt beg the Society's pardon for offering to them any agricultural theory; but the following remarks being ſo connected with general obſervations, I cannot (as I could wiſh) confine them to practice only.

From the ſcarcity and very high value of Compaſs-ſhape Timbers, the enormous waſte in his Majeſty's yards, as well as loſs of time in cutting them out from large trees, when not to be had of a natural growth, ex-

excluſive of the delays occaſioned by the want of trees fit for that purpoſe, I have been led to conſider that the ſhapes might be ſo altered in the infant growth of the tree, as to ſuit the different purpoſes. From the ineſtimable value of the object, and the extreme length of time which muſt elapſe before the full advantages of theſe improvements can be obtained, I was induced to make ſome trials, to prove what was likely to be effected.

By the figures annexed *(ſee the cut)*, and from ſtrict obſervations on effects inadvertently produced from ſomewhat ſimilar cauſes, I have concluded that the deſign might be accompliſhed; and have taken the liberty of ſubmitting this paper to the ſuperior judgment of the Society, by whom more perfect plans may be formed; and, if it meets their approbation, may be conveyed, through their extenſive channel of information, to the country at large. Humbly preſuming on the candour of the Society, to excuſe thoſe imperfections which from

from inexperience in literary communications may herein appear, I beg leave to ſubſcribe myſelf,

Your moſt obedient humble ſervant,

WILLIAM RANDALL.

Maidſtone,
January 21, 1795.

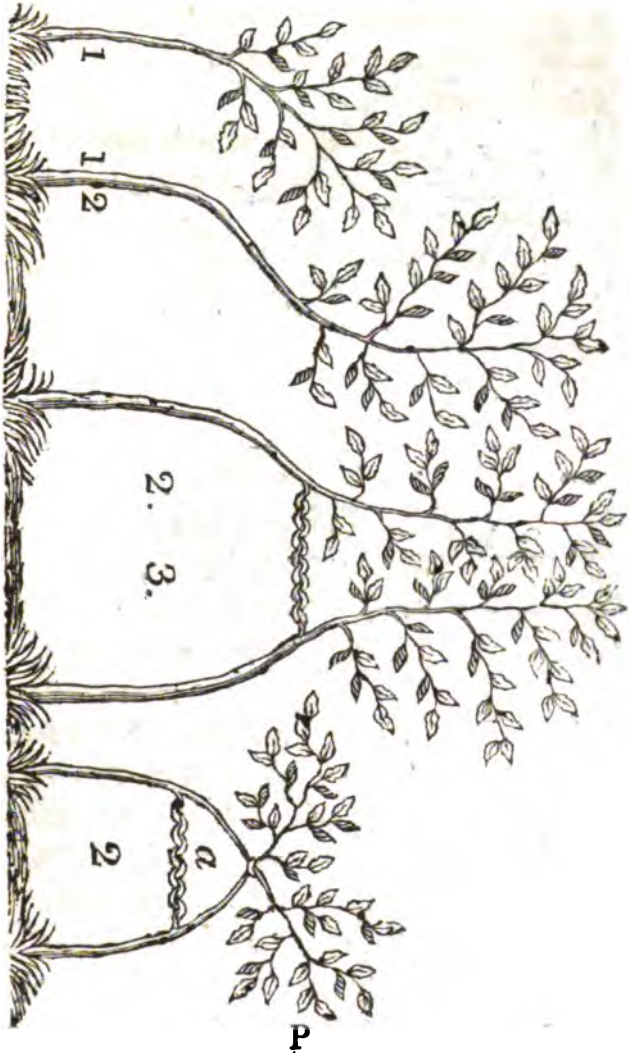
Mr. MORE.

RULES for training OAK TREES to Compaſs Shapes, for Naval Purpoſes.

IT may not be improper to remark, that moſt of the numerous families of timber-trees produce their leaves and ſide-ſhoots alternately or in pairs: in the firſt claſs is the oak, whoſe leading ſhoot frequently takes a reclining direction; yet in proceſs of time, if it meet with no obſtructions, it becomes erect: thoſe producing leaves and laterals in pairs, as the aſh, maple, &c. ſeldom alter the poſition they firſt take.

It is found materially neceſſary, in the common practice of raiſing trees, to keep

CUT, No. 1, of Mr. RANDALL's Method of TRAINING OAKS.



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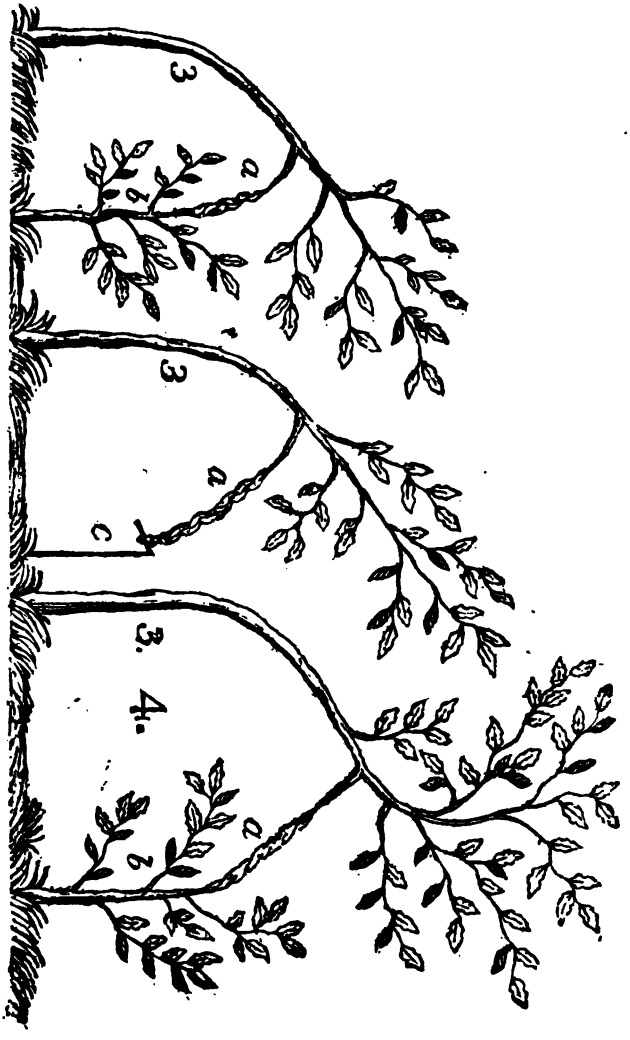
Cut, No. 2, of Mr. Randall's Method of Training Oaks,



them upright, to leave all the lateral ſhoots entire, or cut to what are in the nurſery trade termed ſpurs, from ſome diſtance below the head, eſpecially on all alternate-leaf trees; for when, by eagerneſs to accelerate the height of thoſe trees, unſkilful perſons cut cloſe all the ſide-ſhoots, it generally happens, from the luxuriant growth of the leader, and the weight of its full-extended foliage, a bend in the ſtem is brought on, which every future ſhoot aſſiſts to increaſe, until a regular head is formed; which done, the leader will aſſume an upright direction, and frequently returns to be perpendicular over the root.

Theſe obſervations are, no doubt, well known to the Society, and to all other perſons acquainted with the growth of trees; yet, from every practical rule and impartial ſurvey of effects inadvertently produced from ſimilar cauſes, it will be found fully applicable to the preſent caſe; namely, to reverſe the methods uſed to obtain ſtrait-ſtemmed trees, by taking off twice every year, in March and June, all the laterals

cloſe to the ſtem; beginning, when about eight feet high, and continue till twenty or more feet. This will cauſe the Oak-trees on which it is practiſed to nearly reſemble the form No. 1 (ſee the cut); after which time, if left to nature, the ſtem will in its regular courſe aſſume, in an advanced age, a form ſomewhat like that marked No. 1, 2. This part of the plan might be well adapted to parks, hedge-rows, and open plantations.

The next part may be extended to woods, and where underwood is regularly cut every fifteen or twenty years; in many of which are numbers of clean young oaks. Wherever two kindly trees happen to grow ſo near as to be brought (by pulling down the heads with a ſtick having a hook at one end) to reach each other, a ſtrong branch from towards the top may be gently twiſted (ſo as not to deſtroy its growing faculties), and joined together by a wove, which keeps the ſtems in the poſition ſhewn, and reſembles the form No. 2. It is, by referring to common cauſes, to be con-

concluded that each leader will purſue an upright courſe, which will cauſe the future appearance to reſemble No. 2, 3.

In either of the above-mentioned ſituations, where there are ſingle trees that cannot be brought to join with others of the ſame kind, and the firſt plan not approved of, any ſpecies of wood might anſwer the purpoſe, by cutting it of the height required, and bringing the branch from the Oak down to it, then faſtening it by a nooſe eaſily made by twiſting the branch as before: in default of a neighbour grower, a ſtrong ſtake with a hooked end would endure three or four years, and anſwer the purpoſe of confining the tree (ſee No. 3): its future growth will be likely to incline upward, and in time to form a ſhape nearly as No. 3, 4. None of theſe proceſſes are expenſive: the two laſt plans, I find, can be done in ten minutes each tree: it can be only a trifling obſtruction to the growth. Its ſuperior advantages will be found in woods, where, at the following fall or any future period, thoſe that fail to form

ſo deſirable a ſhape as in the opinion of a judicious wood-reef is neceſſary, may be taken down, with little difference in their value, had they been left to a natural courſe.

From the age of eight to fourteen years, if free growers, or about the ſame number of feet in height, I find is the moſt convenient time to fix them, according to the different deſigns. The ſpring before the leaf comes out, I alſo find the beſt ſeaſon for twiſting the branches, or any reduction of them.

It would, I preſume, be needleſs to point out which are the moſt valuable bends in Oak timber, as alſo to refer to atteſtations of the natural trees reſembling the forms which are in the cut annexed, and intended only to convey the ideas of the deſign. The concluſions drawn impartially from natural products, I judged eſſentially neceſſary to take a full view of the effects; which ſmall deviation from the Society's rules of admitting practicable communications only, will, I truſt, be excuſed, from the particular circumſtances of the caſe.

PAPER

IN

CHEMISTRY.

CHEMISTRY.

IT has long been the ardent wiſh of every humane mind to alleviate, if poſſible, the evils which ariſe to the induſtrious Labourers in thoſe manufactures where the health of the Workmen is liable to be injured by the nature of their employment: among theſe ſtands foremoſt, the making WHITE LEAD; and the horrible complaints to which the workmen are ſubject in that manufacture, and which principally ariſe from the duſt of the corroded lead, will be in a great degree prevented by the practiſing a method deſcribed in the following Paper. The Society, fully ſatisfied of its utility, have this Seſſion voted their GOLD MEDAL to Mr. WARD, the inventor, for his ingenuous communication of it to the Public; and a complete Model is reſerved in the Society's Repoſitory.

SIR,

SIR,

OBSERVING that, among the various Premiums offered by the Society for the Encouragement of Arts, Manufactures, and Commerce, one is mentioned for diſcovering a method of preparing White Lead that ſhall not be prejudicial; I take the liberty to ſend you a drawing of my invention, to prevent the ill effects to the working people in preparing White Lead.

In order to explain, as well as I can, the advantage that will accrue to the workmen in adopting my invention, in preference to the common mode of preparing White Lead, I will firſt ſtate what the common mode is. When blue lead is in part corroded in the ſtacks, by an acid raiſed by a conſiderable degree of heat, brought on by horſe-litter, the corroded and uncorroded lead are taken from the ſtacks to a room called the engine-loft, where a pair of iron rollers is fixed with a ſcreen under them:

the

the lead in this ſtate is paſſed through the rollers and ſcreen; from the motion of theſe rollers and ſcreen, by which the White Lead is ſeparated from the uncorroded or blue lead, together with the moving the lead in order to its being paſſed through them, a very conſiderable quantity of fine duſty white lead is raiſed, which almoſt covers the workmen thus employed, and is very pernicious to them. And not only in this part of the proceſs are they liable to be thus injured; but they are again expoſed to the duſty lead, by removing the blue lead from the ſcreen-houſe to the furnace, as there ſtill remains a quantity of the fine particles of White Lead, which of courſe riſes in the removing it; and in removing the White Lead alſo from under the ſcreen to the grinding-tub, a quantity of the duſt ariſes, which is very detrimental to the people ſo employed.

My invention removes all theſe difficulties reſpecting the dry duſty white lead, ſo very injurious to the health of the working

people; and conſiſts of a veſſel, as ſhewn in Plate No. 2, twelve feet long, ſix feet wide, and three feet ten inches deep. In this veſſel is fixed a pair of braſs rollers in a frame, one roller above the other: the centre of the rollers is about ten inches below the top of the veſſel; and one inch lower, is a covering of oak boards or riddles, an inch thick, fixed in the inſide of the veſſel in a groove, ſo as to be taken out occaſionally: theſe boards are bored with a centre-bit as full of holes as may be, without danger of breaking into each other; the ſize of theſe holes is, in the machine at large, about five eighths of an inch diameter. This being done, the veſſel is filled with water about three inches above the oak boards or riddles; the lower braſs roller is now under water, and about half of the upper roller is under water alſo: thus the lead coming from the ſtacks is put through the braſs rollers in water, and by raking the lead with a copper rake over the

oak

oak boards or riddles, the white lead paſſes through the riddles, and the blue lead remains above; which being taken out, is thrown upon an inclined plane of ſtrong laths to drain; where it remains about twelve hours, when the blue lead is ready for the furnace to be remelted: by this means no duſty white lead can riſe in any part to the work people. No ſuch plan as this (although long deſired) has, to my knowledge, been put in execution, ſo as to anſwer all the purpoſes above ſtated. It may be aſked, why the lead in the common mode is not made wet before it is paſſed through the rollers and ſcreens? Should this be done, the lead would be a paſte on the rollers and ſcreen, and the white lead prevented ſeparating from the blue lead, which is abſolutely neceſſary in the preparation of white lead.

Should this invention meet the approbation of the Society, I ſhall feel myſelf happy in having contributed to the relief of the

the working people employed in the manufacturing of White Lead.

I am, SIR,

Your very humble ſervant,

ARCHER WARD,

Derby White-Lead Works.
Jan. 2, 1795.

Mr. MORE.

Three Samples accompany this.

No. 1. contains a ſample of White Lead, as firſt taken from the ſtack.

No. 2. contains a ſample of White-Lead duſt, after it has paſſed through the braſs rollers, and ſeparated from the blue lead.

No. 3. contains a ſample of White Lead completely manufactured.

Theſe ſeveral ſamples are reſerved in the Society's collection for the uſe of the Public.

I DO hereby certify that the White Lead made at the manufactory at Iſlington, belonging to Walker, Ward, and Co. is, and has been for ſome time paſt, manufactured in the manner as ſtated by Mr. Ward, in his letter, addreſſed to Mr. More, and that many tons have been manufactured; and that, ſince Mr. Ward's plan was adopted, no other method has been uſed.

Witneſs my hand, this 19th day of January, 1795.

SAMUEL WALKER PARKER.

I HAVE had the pleaſure of examining the foregoing invention, and think it a very valuable improvement on the general mode of preparing White Lead: I am very ſure it muſt be the means of preſerving the health of the operator in that branch, and of courſe an acquiſition to a great number of

of manufacturers. The quality of the lead is not in the leaſt injured by it; and a ſample has been ſhewn to me, equal to the beſt white lead I ever ſaw.

H. BROWNE,

Irongate, Derby.
Jan. 2, 1795.

Fig. 1.

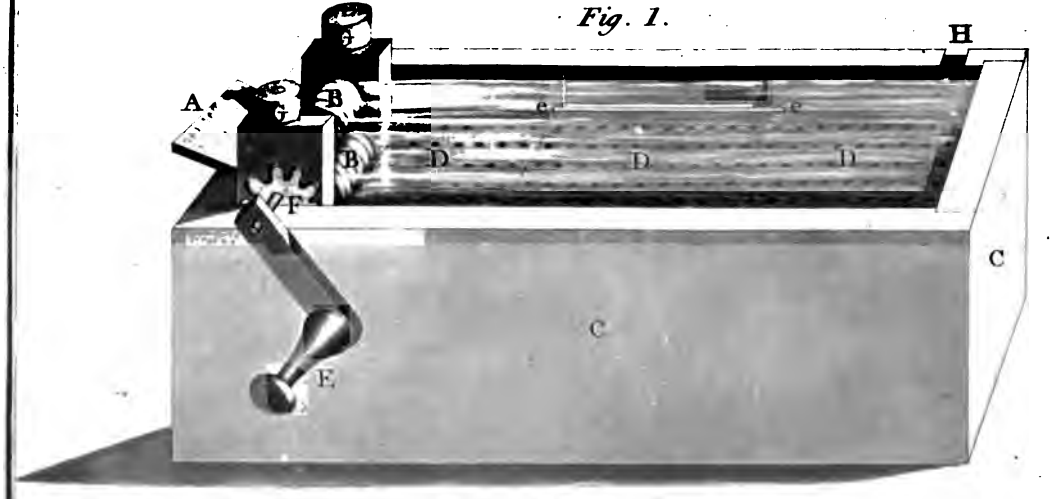


Fig. 2.

Mr Archer Ward's Machine for preventing Dust arising in the Manufacture of White Lead.

Explanation of the PLATE *of the* MODEL *of Mr.* ARCHER WARD's MACHINE *for preventing the ill Effects to the Workmen from the Duſt ariſing in the manufacturing* WHITE LEAD.

Fig. 1. A. An inclined plane of wood on which the White and Blue Lead is placed immediately from the ſtacks, and thus introduced between the braſs rollers B. B.

C. C. The veſſel containing water.

D. D. D. The pierced oak boards or riddles, which, by being made to ſlide in grooves in the ſides of the veſſel C. C, may occaſionally be taken out by removing the wooden bar, *e. e.*

E. A handle or winch, which, in the machine at large, may be a wheel communicating to the mill-work, and thus turning the rollers, B. B.

F. A pinion fixed on the gudgeon of the upper roller, and communicating with a ſimilar pinion on the arbor of the lower

roller, keeping both of them in motion by the turn of the handle; as it is neceſſary that the upper-roller ſhould be at liberty to riſe or fall, in order to give a due degree of preſſure to the lead in paſſing between the rollers, two weights, G.G. with proper ſtems to them, (as ſhewn more at large, fig. 2.) are placed over the gudgeons of the upper roller, thereby keeping a due degree of preſſure; and if any piece of the lead ſhould be thicker than uſual, admiting the roller to give way to it, and thereby preventing any injury to the machinery.

H. A notch in one ſide of the wooden veſſel, ſerving to regulate the depth of the water on the riddles, D. D. D.

PAPER

PAPER

IN

MANUFACTURES.

MANUFACTURES.

A Bounty of FIFTEEN GUINEAS was this Seſſion voted to Mr. JOHN ANTIS, of Fulneck, near Leeds, for his further improvment of the COMMON SPINNING-WHEEL (ſee Volume XI. page 152, where a Plate of his former Wheel is given): and for the uſe and information of the Public, a complete Wheel, according to the laſt improvment, is reſerved in the Society's Repoſitory.

The following is an Abſtract of a Letter from Mr. Antis, on this ſubject, dated Fulneck, May 25, 1795.

SIR,

I WILL now, according to your deſire, explain myſelf, as well as I can, upon the ſubject of my laſt improvement of the

common Spinning-wheel. After having made my former improvement of a ſliding bobbin, I completed a Wheel on that principle: this gave me an opportunity to obſerve, how the firſt invention, and in ſhort, how the whole Wheel, acted; and induced me to make the following obſervations on thoſe parts, which I thought would admit of ſtill further improvement.

1ſt. Beſides the diſagreeable catch which the pinion with one leaf gave at every revolution of the Wheel, the bobbin moved only by ſudden jerks, and did not lay the thread on it ſo even as might be wiſhed: to remedy this, I adopted the motion of an endleſs ſcrew, working a toothed wheel with a heart-ſhaped piece of braſs fixed thereon.

2dly. As the ſpinner muſt be always perfectly at liberty to hold the thread at pleaſure, and not to let it in until it is ſufficiently twiſted, I obſerved, that as the bobbin moved upon a ſquare, the holding of the thread ſo affected it, that

parti-

particularly when the bobbin began to be filled, and conſequently the purchaſe further from the centre, it became quite ſtiff upon the ſquare, and incapable of moving, notwithſtanding the action of the weight; and afterwards, when the thread was left at liberty, it would jump at once half an inch or more: and this would invariably have been the caſe with every other contrivance of the kind which might be ſubſtituted; as for inſtance, a cylinder with a rib, &c. &c. except the weight had been much heavier, which would have occaſioned a greater friction on the machine,

3dly. Beſides what has been obſerved above, it is well known, that in all wheels upon the old plan, as well as in thoſe with my firſt improvement, there was no other way to increaſe the friction of the bobbin, and make it take in more or leſs in proportion to the quantity of thread thereon, than by ſtretching or tightening the double cord; and this could never be

done but at the expence of making the wheel go heavier and heavier, ſo that it became quite troubleſome when the bobbin was nearly filled. The ſame effect followed in ſome wheels that I have ſeen, which were made with a ſingle cord, having another added, to occaſion a preſſure on the neck of the bobbin, whereby the friction was increaſed or diminiſhed; becauſe the ſame degree of preſſure it made upon the bobbin, was alſo made upon the ſpindle, or upon a ſtud on which the bobbin turned, as in the ladies common ſpinning-wheels. As this latter method could not be uſed with a ſliding bobbin, I was under the neceſſity of contriving a new mode, by which the one was made quite independent of the other, ſo that the bobbin might move too and fro with the greateſt freedom, and there might be a means of increaſing the friction without any effect on the velocity of the whole machine. After various trials, I hit upon the

the preſent plan, viz. to make uſe of a ſingle cord, which has only to turn the flyer, therefore needs no ſcrew to tighten it; for, ſhould it, even in time, become ſo ſlack as not to do its duty, it may eaſily be tied or ſtitched a little ſhorter.

In order to regulate the friction on the bobbin, there is a neck of braſs or ſteel faſtened to one end of it, of which a vice or pincher fixed to the ſliding-bar takes hold: this vice muſt be made either of two elaſtic ſprings with wooden tops, or of wood wholly, and boſhed with leather; but if of wood only, then a ſpring muſt be made under the ſhoulder of the ſcrew to anſwer the ſame purpoſe. By tightening this ſcrew more or leſs, the friction may be regulated to the greateſt nicety, provided the ſprings are of a ſtrength rightly proportioned to their functions. It will readily appear that all this may be done without the leaſt effect on the velocity of the whole machine, as thereby nothing is added to

the

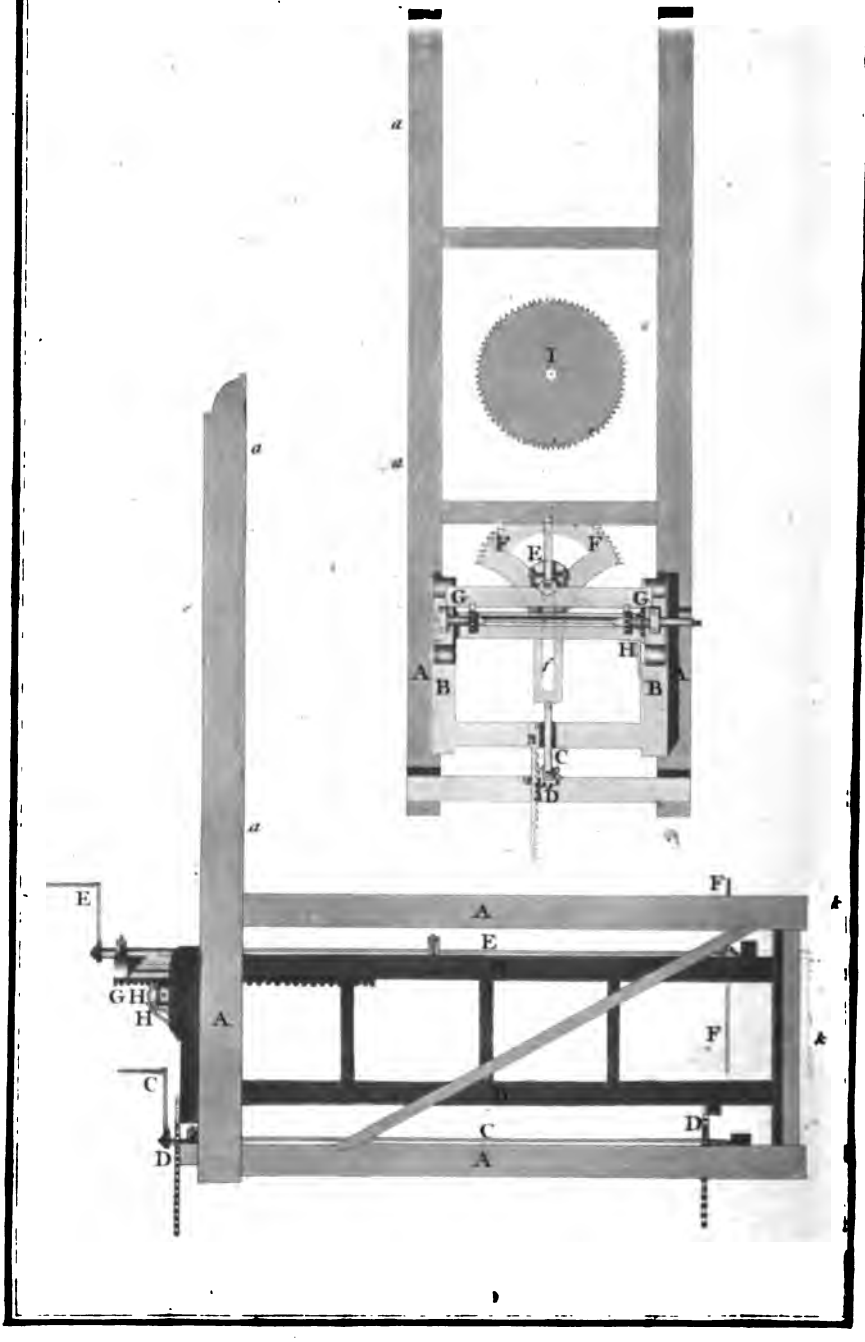
the general friction ſo as to obſtruct it; ſuch a wheel will therefore be found to run much more freely than one with a double cord; and this muſt be conſidered a great advantage to a ſpinner who is obliged to ſpin the whole day for her living.

Theſe are the chief advantages aimed at by the preſent invention; and all who have ſeen and tried it here, think it as great an improvement on my former Wheel, as that was upon the common Spinning-wheel.

PAPERS

IN

MECHANICKS.



Mr. Foulds's Machine for cutting Piles under Water.

MECHANICKS.

The GOLD MEDAL was this Seſſion voted to Mr. JOHN FOULDS, Engineer to the London-Bridge Water-Works, for his ingenious Contrivance of a MACHINE FOR CUTTING OFF PILES UNDER WATER; of which a complete Model and Drawing are reſerved in the Society's Collection, and a Plate is annexed.

Deſcription of the Plate of the Model of Mr. JOHN FOULDS's *Machine for cutting off Piles under Water.*

A. A. THE external frame, which is framed at right angles; and when the frame *a. a.* is laid level, the piles are cut off perfectly ſo, or in any other direction in which it is placed.

B. B. Internal frame.

C. C. Upright ſpindle and handle, which, with the racks and pinions

D. D, advance or recede the internal frame.

E. E. Up-

E. E. Upright ſpindle and handle fixed to the internal frame, by which the ſaw F. F. is worked. In a piece of iron, fixed behind the ſaw, is a mortiſe, *f.* by which the ſaw is admitted to advance upon its centre, as the work goes on; and thus the piles may be cut in any direction required. The ſaw is held faſt or looſened by a ſcrew underneath.

G. G. Vertical racks, worked by an horizontal ſpindle with pinions, by which the internal frame and ſaw is raiſed and lowered, to cut off Piles at various heights.

H. H. A wheel with pall, to ſupport the frame at any determined height.

I. A circular ſaw, to be uſed occaſionally.

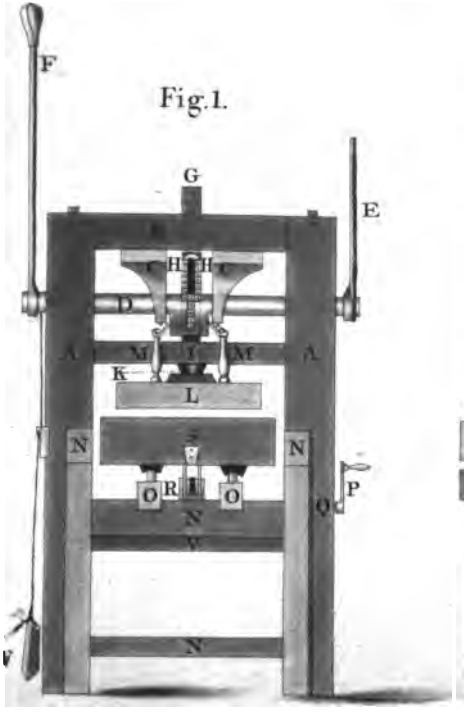


Fig. 1.

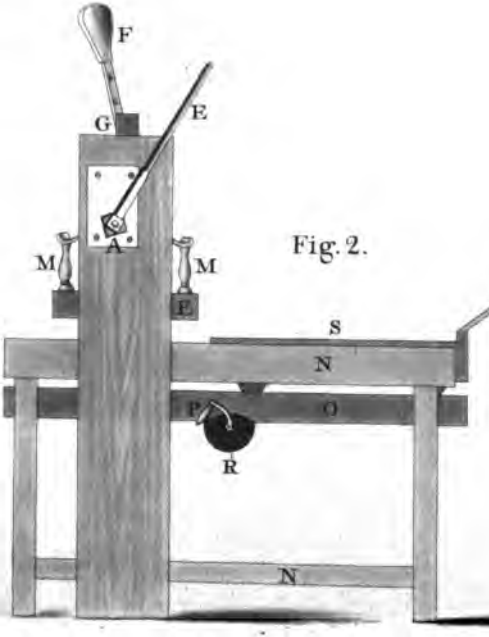


Fig. 2.

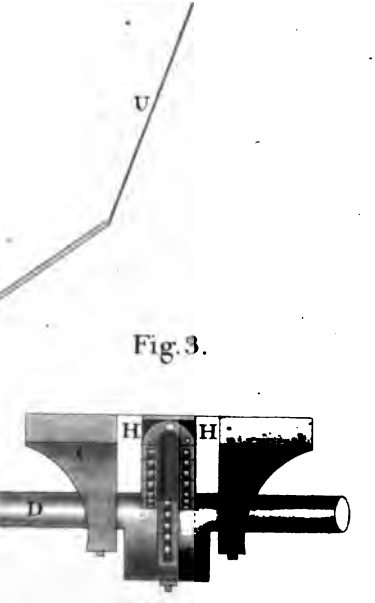


Fig. 3.

Mr. Joseph Ridley's Printing Press.

M. Joseph Ridley's Printing Press

FORTY GUINEAS were this Seſſion voted to Mr. JOSEPH RIDLEY, for his Improvement of the PRINTING-PRESS, as deſcribed in the following Paper, and ſhewn in the Plate annexed; and of which a complete working Model is reſerved in the Society's Repoſitory, for the inſpection and uſe of the Public.

Explanation of Mr. JOSEPH RIDLEY's *Printing-Preſs, of which a Front and Side View are ſhewn,* Fig. 1 and 2, Plate 4.

THE Head of the Preſs is the chief object of this improvement, from which the ſcrew hitherto in general uſe is taken away, and a perpendicular bar of ſteel, with a conical end, lodged in a cup on the platen, ſubſtituted in its ſtead. The purchaſe is obtained by means of a ſpindle paſſing through each ſide of the Preſs, near the bar, to which it is attached by three chains; the two outer ones ſerving to pull

down the bar and platen, and the middle one to raiſe or recover them again. To one end of this ſpindle a lever or handle, about two feet long, is fixed, which, by means of the two chains, pulls down the platen with any force required: at the other end of the ſpindle is alſo another lever, with a weight acting as a fly, which weight may be fixed by means of holes in the lever, at ſuch diſtance from the centre as may be judged neceſſary, according to the work to be done.

Deſcription of the Plate.

A. A. Two ſtrong perpendicular cheeks joined together by three croſs pieces.

B. The upper croſs piece, or head-piece, ſuſtains the preſſure by the two ſtays C.C. being firmly ſcrewed to the head-piece, and having at the ends two ſlit collars to receive the ſpindle D. which is governed by the lever or handle, E. two feet long, and by which the purchaſe is obtained, and may be aſſiſted, if required, by

the other lever, F, with a moveable weight on the other ſide of the Preſs: this weight only becomes uſeful when power and diſpatch are the leading objects. A weight of lead, W, hangs by a cord over a pulley fixed on the axis at the bottom of the lever, F, ſerving to aſſiſt the return of the lever when the platen riſes. The ſpindle D is made broader in the middle than at the ends: the ſpindle and the upright bar, G, are connected by three chains, H H, two of which afford the pull, and the other reinſtates the bar and platen: of theſe chains one is bolted by one end to the lower part of the bar, ſo as to admit the other two, one on each ſide, the lengthwiſe of the bar; and the other end of the chain is brought over the middle of the broad part of the ſpindle, and ſcrewed through the bottom, ſo as to afford an opportunity of adjuſting the chain. The two outer chains being, by means of a ſwivel, extended wide enough to admit the centre one between

them, a ſtrong bolt muſt paſs through the middle of the ſwivel, and the upper part of the bar; and being ſtayed faſt on the back of the bar by a nut or forelock, the other two ends of the chains muſt be brought under the broad part of the ſpindle, one on each ſide the ſingle chain, and ſcrewed to the bottom, as before mentioned. A notch is made in the middle of the ſpindle, in order to receive the three chains, and thereby obtain a great purchaſe. The upper part of the bar, G, is incloſed, and worked in a collar in the middle of the head-piece B: the middle of the bar paſſes by the ſpindle, to which it is coupled by the aforeſaid chains; and the lower end is conveyed through another collar fixed in the middle of the ſhelf, I: the cone at the lower extremity is lodged in a ſteel cup, K, ſcrewed on the middle of the platen; the platen is ſuſpended by four ſprings, branching out from the bar, above the ſhelf, I, with a hole at each

each of their ends, in order to receive the tops of the four pillars, M M. on which male ſcrews are cut: the baſes of theſe pillars are fixed on the platen near the four corners. By nuts properly applied to the ſcrews above the ſprings, the workmen are enabled to adjuſt the platen, ſo that it comes down parallel to the ſtone, and form of letters laid thereon. N N N. the body or frame of the Preſs. V. the lower croſs-piece or main brace, which acts againſt the head, between which are the ribs, O O. The coffin, S. and the form of letters; and upon that the paper, tympans, &c. and friſket, T. U.

The ribs, O O, lie acroſs the main brace, V, and extend beyond the two ends of the frame, to which they are ſtrongly ſcrewed: two long bars of iron, faſtened to the ribs, bear on them the coffin, to the bottom of which ſix pieces of hollow iron are firmly fixed, well fitted and ground ſmooth, in order to procure an

eaſy traverſe, by a gentle motion of the rounce, P, fixed on the end of the ſpit, Q, on which is put a double pulley, R, with two ſtraps made faſt thereto, each at one end; the other ends of the ſtraps are attached one to each end of the coffin, S, to convey it with accuracy to the deſired place*. In the coffin is placed a poliſhed ſtone, forming a flat ſurface with the verge of the coffin; it has likewiſe joined to it, by means of two hinges, the tympan, T, which, in performing the work of printing, is, as uſual, firſt underlaid with parchment, on that two flannels are laid, over them the upper tympan, with a parchment, as before; then U, a thin frame of iron, the ſize of the tympans, called the friſket, on which is paſted a ſheet of paper, cut out in the form of the pages impoſed, in order to keep the ſheet in printing clean, and in its proper place.

* No work with this Preſs requires more than one pull.

In

In order that the ſtays, C C, the ſpindle, D D, and the chains, H H, with part of the bar, may be more diſtinctly ſeen, they are ſhewn on a larger ſcale, at Fig. 3.

THIRTY GUINEAS were this Seſſion voted to Mr. WILLIAM BOWLER for his Invention of a CHURN, as ſhewn in the Plate annexed, No. 5: and the Churn is reſerved in the Society's Repoſitory, for the uſe of the Public.

SIR,

THE bearer, William Bowler, I beg leave to recommend to your notice: he has invented a Churn, which, upon trial, is much ſuperior to any of the Churns that I know are now in uſe. My ſervant has been, for the two laſt times of churning, with the barrel-churn ten or twelve hours: I have known farmers who have been two days before they have got butter; and upon a fair trial, with this new-invented Churn, it produced good butter within the hour.

I am, SIR,

Your moſt obedient ſervant,

Waltham Abbey,
January 13, 1795.

JAMES BERWICK.

Mr. MORE.

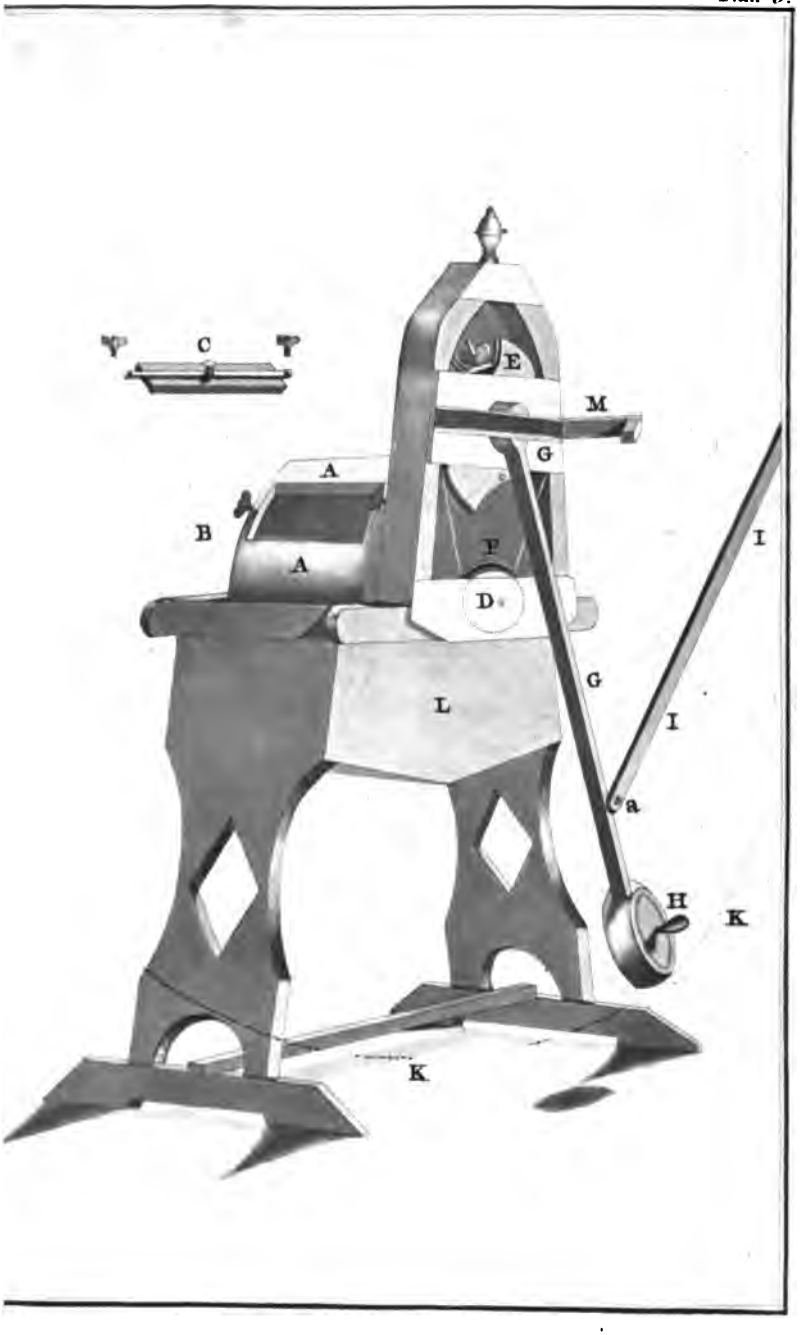
Ex-

Explanation of Mr. WILLIAM BOWLER's *improved Churn.*

THE Churn itſelf is of the barrel-kind, being a cylinder, eighteen inches diameter, and nine inches wide, the ſides wood, and the rim tin-plate, having two openings; the one, eight inches and a half long, by four inches wide, through which the cream is put into the Churn, and the hand introduced for cleaning it; the other, a ſhort pipe, one inch diameter, by which the butter-milk runs out of the Churn when the operation is finiſhed. The firſt of theſe openings has a wooden cover, faſtened down by two ſcrews, and the other a cork fitted to it, while the butter is churning. There is alſo, near the larger opening, a ſmall vent-hole with a peg, to allow a paſſage for any air diſcharged from the cream at the beginning of the operation. An axle paſſes through the Churn, terminating in two gudgeons on which it hangs, its lower part being immerſed in a trough,

to occaſionally hold hot or cold water according to the ſeaſon of the year; and on the inſide of the rim are four projecting pieces of wood, with holes in them, ſerving to beat the cream by the motion of the Churn: this motion is cauſed by a pendulum, three feet ſix inches long, having an iron bob, weighing ten pounds, and at its upper end turning a pulley, ten inches diameter, from which goes a rope twice round another pully, about three inches diameter, fixed on the axis of the Churn, and cauſing it to make a partial revolution by each vibration of the pendulum. There are ſliding covers to the machinery, and alſo a cover to the water-trough, in order, when the hot water is uſed, to ſecure the ſteam, and keep the cream in a due and neceſſary degree of warmth. The motion of the pendulum is given and kept up by a wooden rod, about three feet nine inches long, turning on a pin about three inches above the bob of the pendulum.

Deſ-



M.r Will.m Bowler's improved Churn.

Deſcription of the Plate of Mr. WILLIAM BOWLER'*s improved* CHURN.

A. A. The body of the Churn.

B. An opening, by which the cream is put in.

C. The cover of the large opening. The ſmall hole on the oppoſite ſide of the Churn cannot be ſhewn in the print.

D. The gudgeon on which the body of the Churn hangs.

E. The upper or larger pulley.

F. The ſmaller pulley fixed on the axis or gudgeon of the Churn.

G. G. The rod of the pendulum hanging from the upper pulley, E.

H. The bob of the pendulum.

I. I. The handle, moveable on a pin at *a*, by which the pendulum is moved to and fro, making a traverſe, in form of the dotted line, K. K.

L. The trough for the hot or cold water.

M. A projecting piece of wood, with a ſhoulder, by which the handle I. is ſupported when the churn is not at work.

A Bounty of TWENTY GUINEAS was this Seſſion voted to Mr. JOSEPH KNEEBONE, for his invention of a DRAG to prevent the Accidents which ſo frequently happen to Horſes drawing loaded Carts down ſteep Hills. Of this Contrivance a Wood-cut and Deſcription are given.

SIR,

FROM the great advantages which the Public have derived from the Society for the Encouragement of Arts, Manufactures, and Commerce, it behoves every individual to contribute towards the further progreſs of thoſe improvements which have in a great meaſure been laid open by the liberal donations of this Society.

Permit me then, Sir, to preſent you a model of a ſimple contrivance, invented for

the ſafe and effectual ſtopping of carts, or any two-wheeled carriages, in deſcending ſteep hills, ſo as to take off the great burden from the back of the ſhaft-horſe, and to permit the carriage to deſcend with the greateſt eaſe and ſafety, and which it will do in the moſt mountainous country, with as much eaſe as on a plain. This ſimple and uſeful contrivance, called here a Dog, or Wheel-drag, was invented by Joſeph Kneebone, a poor cordwainer, of this place, who, being obliged for ſome time to undertake the buſineſs of a carter, was frequently diſtreſſed in deſcending ſteep hills; and, after a variety of contrivances, he was at laſt ſo fortunate as to complete the machine here deſcribed, which on every occaſion has never failed to anſwer the deſired purpoſe. I have ſeen it tried, in a variety of inſtances; and within theſe ſix months its uſe has become general, particularly among farmers, where nothing but real and ſtriking advantages

can

can induce them to a change of cuſtom, and which, I preſume, is a mark of its great utility.

This contrivance may be applied to any kind of roads, and is not ſubject to the inconvenience of locking-poles, which on rough roads, or deep ruts, are very apt to overturn carts by the ſudden reſiſtance they meet with.

Should the Society think this invention worthy their attention and patronage, the inventor, who is a poor man, with a large family, will be much obliged for any reward which they may think proper to confer on him: and I ſhall feel myſelf very happy in having an opportunity of preſerving and preſenting to the Public, a contrivance ſo admirably calculated to remove the danger and inconveniency of loaded carts in deſcending ſteep hills.

In order to make the deſcription of this Wheel-drag more intelligible, I have ſent you a model, made of mahogany, and likewiſe

wiſe an imperfect drawing, with references to its different parts.

I am, SIR,

Your moſt obedient humble ſervant,

RICHARD MOYLE.

Marazion,
Dec. 26. 1794.

Mr. MORE.

THE Society having thought proper (after examining the model above alluded to) to requeſt Mr. Moyle to obtain for them a Drag at large; the following letter was received from that gentleman, in anſwer to one written to him: and a trial having been made of the Drag in London, the Bounty was given to Mr. Joſeph Kneebone, and both the model and Drag are reſerved in the Society's Repoſitory, for the uſe of the Public.

SIR,

SIR,

ON the receipt of your favour of the 16th ult. I deſired the ſmith to make a complete Drag for a two-wheeled carriage, according to the form of thoſe in uſe in this neighbourhood: he has accordingly finiſhed it in a very workmanlike manner, and which I have ſent off by this day's waggon. The ſmith informs me, that enlarging the wheel, or increaſing the length of the ſhoulders, gives the Drag great advantages, by making it leſs liable to be choaked with mud, and by giving it a facility to adapt itſelf to hills of little or conſiderable ſteepneſs, which it does readily, by placing itſelf leſs or more forward. It does not appear that any great weight is applied to the wheel; and for that reaſon, wheels made of caſt-iron, with ſpokes, will anſwer equally well, are lighter, and leſs expenſive.

The wheel is only ſeven inches diameter, and the ſhoulders in this Drag are much longer than

than thoſe in the wooden model, for the reaſons before given. I hope it will be ſufficiently wide to receive the London wheels, which ſhould lie eaſy, without preſſing againſt its upright ſides. By frequent uſe, the part on which the greateſt preſſure is applied, will be worn away, ſo as to injure the machine; but in order to prevent that, it is neceſſary to ſhoe it at its firſt onſet, by fixing on a plate of iron (ſteel I ſhould imagine better) by means of two holes in its bottom, which will always receive a ſimilar piece, when it may be wanted, ſo that the Drag is eaſily kept in good repair.

It is probable, that many improvements may be made in this machine, eſpecially in the ſize and conſtruction of its wheel. Suſpecting that your wheels may be wider than ours, I have had this Drag made wider in its inſtep, its neck longer and ſtouter, and in conſequence its body of a greater length, which, with the chain and additional ſhoe, make it weigh eighty pounds, being twenty

twenty pounds heavier than any made here before.

I am, SIR,

Your obedient humble ſervant,

RICHARD MOYLE.

Marazion,
Feb. 2, 1795.

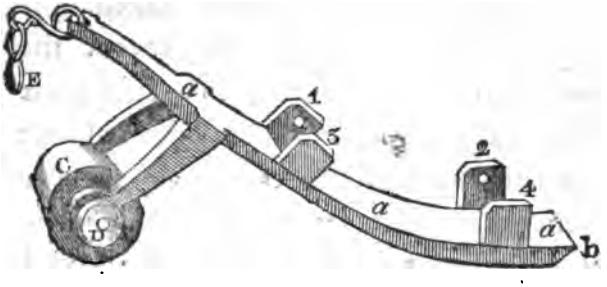
THIS is to certify, that we have lately made uſe of, and applied to our carts, a Wheel-drag, invented by Joſeph Kneebone, of Marazion, in Cornwall, for the effectual ſtopping of two-wheeled carriages in deſcending ſteep hills, and for taking off the increaſed weight thrown on the ſhaft-horſe's back in all deſcents.

This invention, which is ſimple and eaſily applied, anſwers the above intentions in the completeſt manner, ſo as to enable us to convey as much weight down the ſteepeſt hill as on a level, and with as much eaſe to the ſhaft-horſe.

We

We apply the Wheel-drag, on the brow of the hill, to the near-wheel, faſtening it to the ſhaft by a chain, to prevent the wheel from paſſing over it, in caſe of great obſtacles; and we have never obſerved that deep ruts, or looſe ſtones, in any manner leſſen the advantages which this contrivance is calculated for. Inſtead of a loaded cart running on the heels of the ſhaft-horſe on deſcending hills, this Drag, by ſupporting and elevating the wheel, places it on a level, ſo as to oblige the horſe to draw a ſmall burden; and, in ſome inſtances, it is even neceſſary to link the chain-horſe to the dragged-wheel ſide, by which means a weak horſe may be placed within the ſhafts without any riſk or danger. After the cart is deſcended to the bottom of the hill, the drag is taken off, and hung at the under part of the tail of the cart, by two hooks paſſing through the holes in the ſhoulders, 1, 2.

JAMES TAMBLYN,
THOMAS ROSKILLEY,
ROBERT KESKEYS,
} Farmers and Carters.



Deſcription of the Cut of Mr. JOSEPH KNEEBONE's WHEEL-DRAG *for Two-wheeled Carriages.*

a. a. a. A piece of wrought iron, curved to the exact form of a cart-wheel, with the thickeſt part at *b.* on which the weight of the cart reſts.

1. 2. 3. 4. Are ſhoulders which keep the wheel within the Drag, and ſhould be about four inches high.

C. The wheel, made of ſolid iron, nearly as wide as the Drag, ſeven inches in diameter, runs on its axis at D. has a ſtrong ſhoulder, and ſtanding forward reſiſts the ſudden jolts of rough roads.

E. The

E. The chain to be faſtened to the near-ſhaft, to keep the Drag properly under the wheel, which from jerks might be apt to paſs over the Drag, and leave it behind: this is a proper precaution, though ſeldom wanted if the Drag is well conſtructed.

In the ſhoulders 1. 2. are ſhewn holes, by which the Drag is hung on hooks, at the under part of the tail of the cart, when out of uſe.

REWARDS

BESTOWED BY THE

SOCIETY,

FROM OCTOBER, 1794,

TO JUNE, 1795.

REWARDS

BESTOWED IN

AGRICULTURE.

Claſs 1. TO SAMUEL KILDERBEE, Eſq. for having planted ten acres with Acorns, the GOLD MEDAL. See page 119.

Claſs 57. To the Right Hon. Lord BROWNLOW, for having planted twenty-ſix acres with Oſiers, TWENTY POUNDS. See page 130.

Claſs 58. To JOHN PHILLIPS, Eſq. for having planted upwards of ſix acres with Oſiers, TEN POUNDS. See page 135.

To SAMUEL CRAWLEY. Eſq. for having planted four

acres with Oſiers, on land obtained from the River Trent, the SILVER MEDAL. See page 141.

Claſs 75. To THOMAS RAWLINSON, Eſq. for having planted ninety-two thouſand one hundred and ninety-one Timber-trees, the GOLD MEDAL. See page 153.

Claſs 117. To Mr. JOHN BALL, for having cured ninety-ſeven pounds of Rhubarb, of Britiſh growth, the GOLD MEDAL. See page 178.

Claſs 128. To Mr. HENRY HARPUR, for improving Waſte Moor Land, the SILVER MEDAL and TWENTY GUINEAS. See page 182.

To Mr. JOHN JENKINSON, for improving Waſte Rocky Land, the SILVER MEDAL and EIGHT GUINEAS. See page 188.

To

To Mr. JOHN MIDDLETON, for an account of his improved courſe of Crops on Strong Land, the SILVER MEDAL. See page 195.

IN CHEMISTRY.

To Mr. ARCHER WARD, for his invention of a method to ſecure the health of the workmen employed in manufacturing White Lead, the GOLD MEDAL. See page 221.

IN POLITE AND LIBERAL ARTS.

Claſs 189. To Miſs HARRIETT LETITIA WATTS, for Drawings, after Prints by Bartolozzi, the GOLD MEDAL.

To Miſs FRANCES ELEANOR SIMPSON, for a Drawing of the Bignonia, the SILVER MEDAL.

To Miſs ELIZABETH CHRISTIANA FANSHAWE, for a Landſcape after Nature, the SILVER PALLET. Subject, View on the Tamer, in Cornwall.

Claſs 191. To JOHN THOMAS BARBER, for a Drawing, the SILMEDALLION. Subject, Narciſſus, from a caſt, in the Society's Great Room, after the Statue of Narciſſus, by John Bacon, Eſq. R. A.

Claſs 194. To Mr. JOHN JAMES MASQUERIER, for a Drawing of Outlines after Plaſter, the LESSER SILVER PALLET. Subject, the Laocoon.

Claſs 199. To Mr. CHARLES CRANMER, for an Hiſtorical Drawing, the GREATER SILVER PALLET. Subject, the caſting the Accuſers of Daniel into the Den of Lions.

To

To Miſs SUSANNA WATTS, for Feather-work and Needle-work, the SILVER MEDAL and TEN GUINEAS.

IN MANUFACTURES.

To Mr. JOHN ANTIS, for his further improvement of the common Spinning-Wheel, FIFTEEN GUINEAS. See page 233.

IN MECHANICKS.

To Mr. JOHN FOULDS, for his Model, ſhewing an improvement of the method of cutting Piles under water, the GOLD MEDAL. See page 241.

To Mr. WILLIAM BOWLER, for his improved Churn, THIRTY GUINEAS. See page 250.

To WILLIAM WELLMANS, for his model of a Fly-crane in-

intended to prevent accidents in Walking Wheel-cranes, FIFTEEN GUINEAS; a Model of which is reſerved in the Society's Repoſitory.

To Mr. JOSEPH RIDLEY, for his improved Printing-preſs, FORTY GUINEAS. See page 243.

To Mr. JOSEPH KNEEBONE, for his Drag for two-wheeled Carts, TWENTY GUINEAS. See 254.

PRESENTS

RECEIVED BY THE

SOCIETY,

SINCE THE PUBLICATION OF THE TWELFTH VOLUME OF THESE TRANSACTIONS.

With the names of the DONORS.

BOOKS.

The ROYAL SOCIETY.

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Mr. WILLIAM RENWICK.

A Pamphlet, entitled, A Letter to the Critical Reviewers, from Mr. William Renwick.

So-

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The Second Part of the Firſt Volume of the Hiſtory of Cumberland, by William Hutchinſon, Quarto.

EDWARD BANCROFT, M. D. F. R. S.

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facturing White-Lead, by Mr. Archer Ward, of Derby. See page 229.

MANUFACTURES. CLASS III.

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CLVI. An improved Churn, by Mr. William Bowler, of Cambridge. See page 250.

CLVII. A Drag for a two-wheeled Cart, by Mr. Joſeph Kneebone, of Marazion, Cornwall. See page 254.

CLVIII. A Model of an improved Printing-Preſs, by Mr. Joſeph Ridley. See page 243.

CLIX. A Model in braſs of a Walking-Wheel Fly-Crane, by Mr. Wellmans, of Featherſtone-ſtreet, Moorfields.

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Doe, Thomas, Eſq. *Bygrave-Park, Herts*
††Dolben, John Engliſh, Eſq. F. A. S.
Dollond, Mr. Peter, *St. Paul's Church-yard*
Dollond, Mr. John, *ditto*
Dorrien, Magens, Eſq. *Cavendiſh-ſquare*
Douce, Thomas Auguſtus, Eſq. *Townmaling, Kent*
Doughty, John, Eſq. *Aldermanbury*
Dowbiggin, Mr. Lancelot
Dowbiggin, Samuel, Eſq. *Hatfield Regis, Herts*
Down, Richard, Eſq. *Bartholomew-lane*

Downer, Mr. Henry, *Fleet-ſtreet*
Drake, George, Eſq. *Bedford-ſquare*
Drake, Francis, Eſq. *Wimpole-ſtreet*
Drake, Mr. Samuel, *Margaret-ſtreet, Weſtminſter*
P Draper, Daniel, Eſq. *St. James's ſtreet*
Draper, Mr. John, *Clayton-place, Kennington-Road*
Driver, Mr. William, *Kent-ſtreet-road*
Drummond, James, Eſq. *Sackville-ſtreet*
Duberley, James, Eſq. *Soho-ſquare*
Dunn, Samuel, Eſq. *Adelphi*
Dunnage, Mr. John, *Philpot-lane*
Dunnage, Mr. James, *ditto*
P. Duroure, Colonel, F. R. and A.S.
††*Duval, the Rev. Philip, D.D. F.R. and A.S. *Newman-ſtreet*

E.

††P Egremont, George Wyndham, Earl of
P Eardley, Sampſon, Lord, M.P. F.R. and A.S.
Einſiedel, His Excellency Count
Eden, Sir John, Bart. M.P.
Earle, Henry, Eſq. *Gower-ſtreet*
Eaton, Rev. Stephen, *St. Ann's, Soho*
P Eaton, Peter, Eſq. *Weſtford, Eſſex*
P Eckerſall, John, Eſq. *Burford-houſe, near Dorking, Surry*
Echardt, Francis Frederick, Eſq. *Whiteland-houſe, Chelſea*

Eccles,

Eccles, the Rev. Allan Harriſon, *Bow, Middleſex*
P Eccleſton, Thomas, Eſq. *Scareſbrick, Lancaſhire*
Edwards, John, Eſq. *Bridge-ſtreet, Blackfriars*
Edwards, George, Eſq.
Edwards, Mr. Samuel, *Stamford, Lincolnſhire*
Edwards, Mr. John, *at Mr. Wood's, No.* 35, *Broad-ſtreet-buildings*
P Egan, James, LL.D. *Royal Park Academy, Greenwich*
Ellill, John, Eſq. *Queen-ſtreet, Cheapſide*
Ellington, Leonard, Eſq. *Francis-ſtreet, Bedford-ſquare*
Elliott, John, Eſq. *Pimlico*
P Errington, John, Eſq. *Stanhope-ſtreet, May-fair*
*††Ewer, Samuel, Eſq. *Hackney*
P Ewbank, Andrew, Eſq. *Upper Groſvenor-ſtreet*

F.

††Fife, James, Earl of, F. R. and A. S.
††Falmouth, George Evelyn, Lord Viſcount
Finch, Honourable Captain William, *Albury, near Guildford*
Fludyer, Sir Samuel, Bart. *Baker-ſtreet, Manchester-ſquare*
P Fletcher, Sir Henry, Bart. M.P. *Southampton-row, Bloomſbury*
Farmer, Samuel, Eſq. *Beckenham, Kent*

Farell, Rev. Charles, *Bungton, near Kimbolton, Huntingdonſhire*

Fellowes, Mr. William, *Tooley-ſtreet*

P Felton, Samuel, Eſq. F. R. and A. S. *Carburton-ſtreet, Fitzroy-ſquare*

P Fermor, William, Eſq.

Ferris, Samuel, M. D. and F. A. S. *Harpur-ſtreet*

Feuilleteau, William, Eſq. F. R. and A. S. *Charlotte-ſtreet, Rathbone-place*

Filmer, Beverſham, Eſq. *King's-road*

Fiott, John, Eſq. *Fenchurch-ſtreet*

Fitzherbert, Thomas, Eſq. *Roehampton, Surry*

Fletcher, Mr. Thomas, *Bridge-ſtreet, Blackfriars*

Fludyer, George, Eſq. M. P.

Fordyce, George, M. D. F. R. S. *Eſſex-ſtreet, Strand*

Forſyth, William, Eſq. F. A. S. *Kenſington*

Fourdrinier, Henry, Eſq. *Lombard-ſtreet*

††Fowler, David Burton, Eſq. *Fig-tree-court, Temple*

P Franco, Jacob, Eſq. *Robert-ſtreet, Adelphi*

Frankland, William, Eſq. *Cavendiſh-ſquare*

Franks, William, Eſq. *Beech-hill, Enfield, Middleſex*

Frend, Mr. George, *abroad*

Froſt, Mr. Thomas, *Goldſmith-ſtreet*

Fry, Edmund, Eſq. *Type-ſtreet, Chiſwel-ſtreet*

Fry, Mr. Joſeph Storrs, *Briſtol*

Fulton, Henry, Eſq. *Watling-ſtreet*

G.

• Groſvenor, Richard, Earl, F. R. S.
Glencairn, Earl of
P Gallway, Arundel Lord Viſcount, M. P. and K. B.
P Greville, Right Honourable Charles, M. P. and F. R. S.
Greville, the Honourable Robert, F. R. and A. S.
Grey, Sir Henry, Bart. *Howick, Northumberland*
†Gaſcoigne, Sir Thomas, Bart. F.A.S. *Partington, in the County of York*
Green, Major-General Sir William, Bart. F. R. and A. S. *Chandos-ſtreet, Cavendiſh-ſquare*
Gape, Joſeph, Eſq. *Bridge-ſtreet, Weſtminſter*
Garrett, Daniel, Eſq. *Portſmouth*
P Geary, William, Eſq. *Oxen-heath, Kent*
Giſborne, Thomas, M. D. F. R. S. *Clifford-ſtreet*
Glenny, George, Eſq.
P Godſchall, William Man, Eſq. F. R. and A. S.
Godwin, James, Eſq. *Wingfield, Berks*
Goldthwait, Thomas, jun. Eſq.
Golden, Robert, Eſq. *Red-lion-ſtreet*
Goodwyn, Henry, jun. Eſq. *Eaſt Smithfield*
Goodchild, Mr. Thomas, *Tooley-ſtreet*
Goodhew, William, Eſq. *Deptford*
Gould, the Rev. William D.D. F.R.S. *Stapleford-Abbot, Eſſex*

Gordon,

Gordon, Edward, Eſq. *Bromley, Middleſex*
Gordon, Mr. Alexander, *St. John ſtreet*
Goſling, Francis, Eſq. *Fleet-ſtreet*
Goſling, William, Eſq. *Fleet-ſtreet*
Graham, Aaron, Eſq. F. R. S. *Great Ruſſel-ſtreet*
Grant, Major John, *Hill-ſtreet, Berkeley-ſquare*
†Grant, John, Eſq. *Fleet-ſtreet*
Grant, Peter, Eſq. *Fort Auguſtus, North Britain*
††Gray, Walker, Eſq. *London-ſtreet*
††Green, Valentine, Eſq. F. A. S. No. 13, *Berners-ſtreet*
P Green, Rupert, Eſq. No. 13, *Berners-ſtreet*
Green, Mr. Joſeph, *Tower-ſtreet*
Green, Mr. William, *Deptford*
††Greene, Thomas, Eſq. F. A. S. *Gray's-inn*
Greenwood, Abraham, Eſq. *Steining-lane*
Greg, John, Eſq. F. R. S. *Stratford place*
P Gregory, Robert, Eſq. *Berners-ſtreet*
Gower, Charles, Eſq. *New Inn*
Greſley, Rev. William
Grieve, John, M.D. F. R. and A. S. *Norfolk-ſtreet, Strand*
P Griffith, Edward, Eſq. of *Caernarvon*
Griffith, John, Eſq. *Queen's-ſquare, Bloomſbury*
Groſvenor, Richard, Eſq. M. P. *Berkeley-ſtreet, Manchester-ſquare*
Groves, John, Eſq. *Sloane-ſtreet, Knightſbridge*
P Grote, George, Eſq. *Threadneedle-ſtreet*

Groote,

Groote, Mr. George William, *Dean-ſtreet, Soho*
††Grubb, John, Eſq. *Lincoln's-inn-fields*
Grymes, Major John Randolph, *Knightſbridge*
Gubbins, Mr. James, *Surry-ſtreet*

H.

††*Hardwicke, Philip Earl of, F. R. and A. S.
Howard, John Lord, K. B.
Hawke, Martin Lord
**Hawkeſbury, Charles Lord, V. P.
Heathfield, Francis Auguſtus Lord
Haſlang, His Excellency Count
Harcourt, Honourable General William
Honywood, Sir John, Bart. M. P. *Bedford-ſquare*
Hume, Sir Abraham, Bart. F.R.S. *Wormleybury*
Hanmer, Sir Thomas, Bart. *Hanmer, Flintſhire*
Heathcote, Sir John, *Edenſor, Langton-Hall, Staffordſhire*
Harley, Right Honourable Thomas, Alderman M.P. *Alderſgate-ſtreet*
Hadley, Mr. Nathaniel, *Long-acre*
P Hagen, Mr. Jacob, *Walworth*
Haley, Mr. Charles, *Wigmore-ſtreet*
Hall, Mr. Abraham, *Aldermanbury*
Hall, Mr. Luke, *Gutter-lane, Cheapſide*
Hallet, William, Eſq. *Farringdon, Berks*
Hamilton, Rev. Anthony, D.D. F.R. and A.S. *St. Martin's Church-yard*

Hamilton,

Hamilton, William, M.D. *Old Broad-ſtreet*
††Hamond, William Parker, Eſq.
Hammond, Francis, Eſq. *Potter's Bar, Herts*
Handaſyde, Mr. Gilbert, *Green-walk, Southwark*
Hands, Mr. Samuel, *Birmingham*
Hankey, Joſeph, Eſq. *Poplar*
Hanmer, Job, Eſq. *Holbrook-Hall, Sudbury*
Hardcaſtle, Joſeph, Eſq. *Duck's-foot-lane*
Harding, John, Eſq. *College-ſtreet, Weſtminſter*
P††Harman, Jeremiah, Eſq. *Princes-ſtreet, Lothbury*
Harriſon, Richardſon, Eſq. *Freern-Barnet, Middleſex*
Harrop, Joſeph, Eſq. *Great Marlborough-ſtreet*
Hart, Mr. Henry, *Lamb's-conduit-ſtreet*
Harris, the Rev. Evan, *Sloane-ſtreet, Knightſbridge*
Harwood, William, Eſq. *Hanwell-park*
Haſſal, Charles, Eſq. *Eaſtwood, Pembrokeſhire*
Haſſell, George, Eſq. *Hanover-ſtreet, Hanover-ſquare*
*Haſtings, Warren, Eſq. *Park-lane*
Haſwall, Mr. Alexander, *Wigmore-ſtreet*
Hawkins, John, Eſq. F.R.S.
Hay, Mr. Thomas, *Long-acre*
Hayter, Mr. Jonathan, *King-ſtreet, Cheapſide*
Hayward, Mr. Richard, *Piccadilly*
††Heaviſide, Richard, Eſq. *Somerſet-ſtreet, Portman-ſquare*
P††Hebert, James, Eſq. *Great Portland-ſtreet*
Hele, John, Eſq. *Charlotte-ſtreet, Rathbone-place*
Hemming, Mr. John
Henderſon, John, Eſq. *Terrace, Adelphi*
Hendy, Mr. Alexander, *Upper Thornhaugh-ſtreet*

Herne,

Herne, Mr. William, *Paternoſter-row*
Hewlett, Mr. William, *Strand*
Hewetſon, John, Eſq. *Tower-hill*
Hexter, Mr. Robert, *Eaton College*
Heylyn, John, Eſq. *Iſlington, and Threadneedle-ſtreet*
Hilton, John, Eſq. *Ironmonger-lane, Cheapſide*
Hill, Richard, Eſq. *Plymouth, Glamorganſhire*
P Hoare, Charles, Eſq. F. A. S. *Fleet-ſtreet*
Hoare, Jonathan, Eſq. *Stoke-Newington*
Hobſon, Mr. Robert
Hobſon, Mr. William, *Thomas-ſtreet, Southwark*
Hodgſon, Mr. George, *Lambeth-marſh*
Hood, Alexander, Eſq. *Royal Navy*
Hood, William, Eſq. *Carron Warehouſe, Earl-ſtreet, Blackfriars*
Holder, James, Eſq. *Aſh-Park*
P Holland, Henry, Eſq. *Sloane-place, Knightſbridge*
Holland, Mr. Richard, *Half-moon-ſtreet, Piccadilly*
Holland, Mr. George, *High Holborn*
Holliday, John, Eſq. F.R.S. *Great Ormond-ſtreet*
Hollis, Thomas Brand, Eſq. F.R. and A.S. *Cheſterfield-ſtreet*
Holcombe, Rev. William, *Canon of St. David's*
Holmes, Mr. John, *White-friars*
Holme, Mr. William, *Baſs-court, Thames-ſtreet*
Home, Patrick, Eſq. M.P. *Gower-ſtreet*
Homfray, Samuel, Eſq. *Mirtry-Tidvike, Glamorganſhire*
Honeybourne, Mr. Robert, *Stourbridge*

Honywood,

Honywood, Filmer, Eſq. M.P. *Charles-ſtreet, Berkeley-ſtreet*
*Hooper, Edward, Eſq. V:P. F. R. S.
Horner, Thomas, Eſq. *Mell's Park, near Froome, Somerſetſhire*
Horton, Mr. William, *Newgate-ſtreet*
P Houghton, William, Eſq. *Conduit-ſtreet*
Howard, Barnard, Eſq. *Fornham, Suffolk*
P Hudſon, Vanſittart, Eſq. *Temple*
Hughes, Rev. Edward, *Greenfield-hall, Flintſhire*
Hulme, William, Eſq. *Twydale, Kent*
Hunt, Rowland, Eſq.
Hunter, John, Eſq. M.P. *Bedford-ſquare*
Hurt, Charles, Eſq. *Wirkſworth, Derbyſhire*
Huſſey, William, Eſq. *Saliſbury*
Hyde, John, Eſq.

I.

P Ilcheſter, Henry Thomas, Earl of
††Ingilby, Sir John, Bart. M.P. F. R. and A.S.
Jacob, Mr. Joſeph, *Greek-ſtreet, Soho*
P Jamineau, Iſaac, Eſq.
James, Mr. John, *Bankſide, Southwark*
Jardin, Mr. John, *Throgmorton-ſtreet*
Jeffery, George, Eſq. *ditto*
Jefferys, Thomas, Eſq. *Cockſpur-ſtreet*
Jefferys, Mr. George, *Brick-lane, Old-ſtreet*
P Jenkins, Thomas, Eſq. *Rome*

P Jenour,

P Jenour, Joſhua, Eſq. *Fleet-ſtreet*
Jervoiſe, Jervoiſe Clarke, Eſq. M.P. *Hanover-ſquare*
Jeudwine, Thomas, Eſq. *Baſinghall-ſtreet*
Ince, William, Eſq. *Broad-ſtreet, Carnaby-market*
Johnſon, Alexander, L.L. and M.D. *Portland-ſtreet*
P Johnſon, Peter, Eſq. *York*
†† Johnſon, John, Eſq.
Johnſon, John, jun. Eſq. *Berners-ſtreet*
Johnſon, William, Eſq. *Vauxhall*
Johnſon, Mr. James, *Bryanſtone-ſtreet*
Jones, Edward, Eſq. *Weprehall, Flintſhire*
Jones, Mr. Thomas, *Fiſh-ſtreet-hill*
Jones, John, Eſq.
Jones, John, Eſq. *Frankley, Wiltſhire*
Jones, Mr. Francis, *Groſvenor-ſtreet,*
Jourdan, Major Edward, *Harley-ſtreet*
Ives, Jeremiah, Eſq. *St. Clements, Norwich*
Ives, Jeremiah, Eſq. jun. *Cotton, near Norwich*
Jupp, Richard, Eſq. *King's-road*

K.

Kaye, Rev. Sir Richard, Bart. Dean of Lincoln, LL.D. F.R. and A.S.
Kappen, Mr. William, *Southampton-ſtreet, Strand*

Kelly,

Kelly, John, Eſq. *Hart-ſtreet, Bloomſbury*
Kendrick, Mr. Edward, *King-ſtreet, Covent-garden*
Kendal, Jonathan, Eſq.
Kent, Nathaniel, Eſq. *Fulham, Middleſex*
††Keyſall, John, Eſq. *Queen's ſquare, Holborn*
Kidman, Mr. John, *Fleet-ſtreet*
Kimberly, William, Eſq. *Windſor*
King, the Rev. Richard, *Worthin, Shropſhire*
King, Mr. Thomas, jun. *Great Queen-ſtreet*
Knapp, Matthew, Eſq. *Henley, Buckinghamſhire*
Knill, John, Eſq. *Gray's Inn*
Knight, Mr. George, *Cliffe, near Rocheſter*
Knubley, Richard, Eſq. *Bath*

L

P Leeds, Francis, Duke of, K.G. F.R. and A.S.
P Lanſdown, the Moſt Noble the Marquis of
• Leiceſter, George Earl of, F.R.S. and Preſident of the Society of Antiquaries
P Lewiſham, George Lord Viſcount, F.R. and A.S.
Leiceſter, Sir John, Bart, M. P. *Piccadilly*
P Laurent, Sir Francis, Kt.
• Lewis, Sir Watkin, Kt. V.P. M.P. *Parliament-ſtreet*
P††Lambert, Charles, Eſq. F.A.S. *Temple*
Landman, Iſaac, Eſq. *Royal Academy, Woolwich*
Langſton,

Langſton, James Houghton, Eſq. *Bedford-ſquare*
Latrobe, Benjamin, Eſq. *Francis-ſtreet, Tottenham-court-road*
Law, Thomas, Eſq. *abroad*
Lawrence, Richard, Eſq. *Mincing-lane*
Lawrence, Richard James, Eſq.
†Leake, William, Eſq. *Parliament-ſtreet*
Leatham, William, Eſq. *Chatham-ſquare, Black-friars*
Leatham, Iſaac, Eſq. *Burton-le-ſtreet, Yorkſhire*
Lee, Stephen, Eſq, *Hackney*
Legh, George John, Eſq. *Pall-Mall*
Leigh, John, Eſq. *Bedford-ſquare*
Lempriere, George, Eſq. *Monument-yard*
Lettſom, John Coakley, M.D. F.R. and A.S. *Baſinghall-ſtreet*
Levy, Moſes Iſaac, Eſq. F.A.S. *Piccadilly*
††Lewis, John, Eſq. *Welbeck-ſtreet*
††Lewis, Percival, Eſq. *Lincoln's-inn*
Lewis, Mr. William, *Holborn*
Lewis, Thomas, Eſq. *Gower-ſtreet*
Lightfoot, Mr. John, *Barking, Eſſex*
Liptrap, John, Eſq. F.A.S. *Whitechapel-road*
Liſcoe, Samuel, Eſq. *Hayes-wharf*
††Little, Charles, Eſq. *Wigmore-ſtreet*
Llewellyn, John, Eſq. *Penllergare, Glamorganſhire*
P Lloyd, William, Eſq.
* Lock, William, Eſq. *Golden-ſquare*

P Long, Samuel, Eſq. M. P. *Hill-ſtreet, Berkeley-ſquare*

Longman, Mr. Thomas, *Cheapſide*

P Loveden, Edward Loveden, Eſq. M.P.

Lowndes, William, Eſq. *Scotland-yard, Whitehall*

Lowten, Thomas, Eſq. *Temple*

Lowth, Rev. Robert, *George-ſtreet, Hanover-ſquare*

††Lumley, William, Eſq. *Chancery-lane*

M.

*Morton, George, Earl of, F. R. and A. S.

Macdónald, Alexander, Lord

Milford, Richard Lord, M.P.

*PMonćton, the Honourable Edward, M. P. *Portland-place*

Middleton, Sir Charles, Bart. M. P. *Hartford-ſtreet, May-fair*

Moleſworth, Sir William, Bart. *Pencarrow, Cornwall*

* Mac Pherſon, Sir John, Bart.

P Mackreth, Robert, Eſq. M.P. *Cork-ſtreet*

Mackmurdo, Mr. Edward Longdon, *Bread-ſtreet*

P Macnamara, John, Eſq.

Mac Dougal, Mr. James, *Great Windmill-ſtreet*

Mac Konochie, A. Lochart, Eſq. *Suffolk-ſtreet, Charing-croſs*

Malcolm, Mr. William, *Stockwell*

Malcolm,

Malcolm, Mr. Jacob, *Stockwell*
Malo, Mr. Joſeph, *Pavement, Moorfields*
Manley, John George, Eſq. *Braziers, Oxon*
Mainwaring, Mr. Thomas, *Strand*
Marriott, John Martin, Eſq. *Lamb's-conduit-ſtreet*
Marſh, Berrington, Eſq.
Marſh, Mr. William, *South-ſtreet, Groſvenor-ſquare*
Martin, James, Eſq. M.P. *Downing-ſtreet*
Martin, Matthew, Eſq. *Half-moon-ſtreet, Piccadilly*
Martyn, the Rev. Thomas, B.D. F.R.S. *Profeſſor of Botany, Cambridge, Frith-ſtreet, Soho*
Martin, Thomas, Eſq. *Great Marlborough-ſtreet*
††Maſkall, Samuel, Eſq. *Mitre-court, Milk-ſtreet*
Maſon, Miles, Eſq. *Finſbury ſquare*
P Maſon, Rev. William, *York*
Matthews, Edward, Eſq. *Sol's-row, Tottenham-court-road*
Mayor, Mr. Joſeph, *Little Moorfields*
Mayhew, John, Eſq. *Broad ſtreet, Carnaby-market*
Meares, John, Eſq. *Park-lane*
*Melvill, General Robert, F.R. and A.S. *Brewer-ſtreet*
Meredith, Mr. William, *Hyde-ſtreet, Bloomſbury*
Mercer, George, Eſq. *Queen-Ann-ſtreet, Weſt*
Merry, William, Eſq. *Gower-ſtreet*
Metcalfe, Chriſtopher Barton, Eſq. *Weſt-Ham*
Metz, Conrad Martin, Eſq. *Blandford-ſtreet, Manchester-ſquare*
††Meyrick, John, Eſq. F.A.S. *Great George-ſtreet*

††Michell, Mathew, Eſq. *Beaufort-buildings, Strand*
Middleton, Mr. John, *Paradiſe-row, Lambeth*
††Mildred, Daniel, Eſq. *White-hart-court, Grace-church-ſtreet*
Miles, Mr. John, *Birmingham*
Millington, Langford, Eſq. *Tooting, and Berners-ſtreet*
Millington, Mr. Thomas, *Golden-ſquare*
P Mills, Abraham, Eſq. *Fence-houſe, Macclesfield*
Mills, Mr. George, *Old Swan-ſtairs*
Milnes, Richard Slater, Eſq. M.P. *Foiſton, near Ferrybridge, Yorkſhire*
Miniſh, Mr. William, *Whitechapel*
Miſt, Mr. Henry, *Long-acre*
Mitchel, Michael, Eſq. *Walthamſtow*
Montreſor, John, Eſq. *Harley-ſtreet*
Montolieu, Lewis, Eſq. F.A.S.
•Montagu, Mrs. Elizabeth, *Portman-ſquare*
Moorcroft, Mr. William, *Half-moon-ſtreet*
Morſe, Leonard, Eſq. F.R.S. and S. A. *Great George-ſtreet, Weſtminſter*
Morſe, Major-General Robert, F. R. and A. S. Chief Engineer at *Gibraltar*
Morſe, Leonard Becher, M.A. *Great George-ſtreet*
Morris, Mr. William, *Whitcombe-ſtreet*
Mortimer, Thomas, Eſq.
Moſeley, Walter Michael, Eſq. *near Worceſter*
Moſer, Mr. John, *Frith-ſtreet, Soho*
Mulcaſter, Colonel Frederick George, *Portſmouth*
Munn,

Munn, Daniel Rolfe, Eſq. *Hammerſmith*
Murrey, John, M.D. *Bedford-ſtreet, Bedford-ſquare*

N.

P Norfolk, Charles Duke of, Preſident, F.R. and A.S.
**Northumberland, Hugh Duke of, V. P. K.G. F.R. and A.S.
Naſh, Mr. Thomas, *Worceſter*
Naſh, John, Eſq. *Caermarthen*
Newcombe, Mr. William, *Bank*
P Newton, Robert, Eſq. *Norton-houſe, Berks*
P Newton, Andrew, Eſq. *Cecil-ſtreet, Strand*
De Neyva, Joſeph da Cunha Para, Eſq. *Artillery-place*
Nichols, Mr. Deputy, *Red-lion-paſſage, Fleet-ſtreet*
Nicolay, Mr. Frederick, jun. *St. James's palace*
Nicol, Mr. George, *Pall-mall*
Noble, William, Eſq. *Pall-mall*
Nouaille, Peter, Eſq. *Greatneſs, Kent*
Noireterre, Mademoiſelle De, *Paris*
Norman, Robert, Eſq. *Cannon-ſtreet*
Nutting, Mr. Joſeph, *King-ſtreet, Covent-garden*

O.

*Orford, Horatio Earl of, F. R. and A.S.
P Oſſory, John, Earl of Upper, F.R. and A.S.

Ogilvie, Scroope, Eſq. *Pall-mall*
Ogle, Mr. Thomas, *abroad*
Oldham, Mr. William, *Lombard-ſtreet*
Ord, John, Eſq. F.R. and A.S. *Lincoln's-inn-fields*
Oſborne, Iſaac, Eſq. *Lawrence-Poultney-lane*
P Oſwald, James, Eſq. *Albemarle-ſtreet*

P.

**Portland, William Henry Duke of, V.P. K.G. F. R. and A. S.
P Plymouth, Otho Earl of, F.R. and A.S.
**Pitt the Right Honourable William, M. P.
Pelham, Right Honourable Thomas, M.P. *Stratton-ſtreet*
Powlett, the Right Honourable Thomas, Governor of the Iſle of Wight, M. P. and F. A. S. *Hackwood, Hampſhire*
*Puſey, Honourable Philip, *Upper Brook-ſtreet*
Packer, Mr. William, *King-ſtreet, Soho.*
Page, Francis, Eſq. M. P. *Aſhton, Oxfordſhire*
Page, Frederick, Eſq. *Aldermaſton, Berks*
P Paice, Mr. Joſeph, *Bread-ſtreet-hill*
Pakenham, Captain Edward, R. N.
Papworth, Mr. John, *Great Portland-ſtreet*
Pariſh, John, Eſq. F.A.S. *Gibraltar*
Park, Mr. James, *Baldwin's-gardens*
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Parkins, Mr. William, *Adelphi Wharf*

Parker,

Parker, David, Eſq. *King's Mews*
††Parker, Mr. William, *Fleet-ſtreet*
Parker, Mr. Samuel, *Bridge-ſtreet Blackfriars*
Parker, Mr. Thomas, *Fleet-ſtreet*
Parkinſon, Mr. Thomas, *Bloomſbury-market*
P††Parkyns, Thomas Boothby, Eſq. V. P. M. P. F. R. and A. S. *Portland-place*
Parnell, Mr. Hugh, *Church-ſtreet, Spital-fields*
Parry, Mr. Edward, *King-ſtreet, Cheapſide*
Parry, William, Eſq. *Norton-hall, Wiltſhire*
Paterſon, William, Eſq. *Devonſhire-place*
Paxton, William, Eſq. *Queen-ſquare, Holborn*
Paxton, Mr. Chriſtopher, *Alderſgate-ſtreet,*
††Payne, Samuel, Eſq. *Vauxhall*
Pearce, William, Eſq. *Craig's-court*
††Pearſon, James, Eſq. *Baſinghall-ſtreet*
Peel, Robert, Eſq. M. P. *Bury, Lancaſhire*
Peirſon, Peter, Eſq. F.R. and A.S. *Inner-Temple*
Pellatt, Mr. Apſley; *Newgate-ſtreet*
††Penn, Granville, Eſq. F.A.S. *New-ſtreet, Spring-gardens*
P Perin, William Philip, Eſq. F. R. and A. S. *Bloomſbury-ſquare*
Perry, John, Eſq. *Blackwall*
Perry, James, Eſq. *Lancaſter-court, Strand*
Perrott, George, Eſq. *Craycombe-houſe, Worceſterſhire*
Petrie, William, Eſq. *Hertford-ſtreet, May-fair*

Phillips, Mr. Samuel, *St. George's road, Blackfriars bridge*
Pickering, Mr. Robert
Pitt, William Morton, Eſq. M.P. and F.R.S. *Arlington ſtreet*
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Pollett, Mr. Robert, *North Weald, near Epping*
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Porter, William, Eſq. *Copthall-court, Throgmorton-ſtreet*
P Potter, Chriſtopher, Eſq. *abroad*
Potter, George, Eſq. *Charing-croſs.*
Pourcin, Mr. Joſeph, No. 143, *Tottenham-court-road*
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Powell, John Clark, Eſq. *ditto*
Powell, Baden, jun. Eſq. *ditto*
Powell, Arther Anneſley, Eſq. *Devonſhire-place*
Powlett, William Powlett, Eſq. M. P. *Sambourne, near Stockbridge, and Queen-Anne-ſtreet Eaſt*
Powney, Henry, Eſq. *Lamb's-conduit-ſtreet*
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Praed, William, Eſq. M. P. *Tyringham, Bucks*
Pratt, John, Eſq. *Lower Brook-ſtreet*
Prinſep, John, Eſq. *Pall-mall*
Pryce, Benjamin, Eſq. *Saliſbury*
Pugh, David Heron, Eſq. *King-ſtreet, Cheapſide*
Pulteney, William, Eſq. M.P. *Bath-houſe*

**Richmond,

R.

**Richmond, Charles Duke of, V.P. K.G. F.R. and A. S.
**Radnor, Jacob, Earl of, V.P. and F.A.S.
**Romney, Charles Lord, V.P. and F.R.S.
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Rawlinson, Thomas, Esq. *Lancaster*
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Rondeau, James, Eſq.
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Ruggles, Thomas, Eſq. F. A. S. *Clare, Suffolk*
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Ruſſell, John, Eſq. R. A. *Newman-ſtreet*
Ruſſell, Francis, Eſq. F. R. and A. S. *Park-ſtreet, Weſtminſter*
Ruſſell, William, Eſq. *Berwick, Northumberland*

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*Shrewſbury, Charles Earl of
P Shaſteſbury, Anthony Earl of, F.R. and A.S.
Scarborough, George Auguſtus Earl of
P Stanhope, Charles Earl, F.R.S.
P Scarſdale, Nathaniel Lord
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††Smith, Major-General Edward
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Saſtres, Mr. Franceſco
Satterthwaite, Mr. John, *Mincing-lane*
Savage, Thomas, M.D. *Conduit-ſtreet*
Savage, Mr. James, *Great Queen-ſtreet*
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Saunders, Thomas, Eſq. *James-ſtreet, Golden-ſquare*
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Saunders, Mr. Edward Grey, *Edgeware-road*
Sayer, Thomas, Eſq. *Bow, Middleſex*
Saxon, Mr. Samuel, *Parliament-ſtreet*
Schaw, Lieut. Col. John B. *Queen-Ann-ſtreet Eaſt*
Scholey, Mr. George, *Old-Swan-ſtairs*
Scott, Robert, Eſq. *Wimpole-ſtreet*
Scott, Hugh, Eſq. *Harley-ſtreet, Cavendiſh-ſquare*
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Scottney, Bryan, Eſq. *Gower-ſtreet*
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Seddon, Mr. Thomas, *Alderſgate-ſtreet*
P Selby, Henry Collingwood, Eſq. *Twickenham-common, Middleſex*
P Selwin, Thomas, Eſq. *Soho-ſquare*
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Sheplee, Mr. Thomas, *ditto*
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Shiffner, Godin, Eſq. *Weymouth-ſtreet, Portland-place*
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P Shore, Samuel, jun. Eſq. *Lincoln's-inn*
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Slade, Thomas Moore, Eſq. *Chatham*
Smirnove, Rev. James, *Upper Mary-le-bone-ſtreet*
*Smith, George, Eſq.
†Smith, John Spencer, Eſq. *abroad*
Smith, William, Eſq. *Lombard-ſtreet*
Smith, Samuel, Eſq. M. P. *Clapham*
Smith, William, Eſq. M. P. *Clapham*
Smith, Mr. John, *Lad-lane*
††Smith, Joſhua, Eſq. M.P. *Great George-ſtreet, Weſtminſter*
Smith, Simmons Smith Joſhua, Eſq. *Batterſea, and Lamb's-conduit-ſtreet*
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*Smith, Mr. Nathan, *Knightſbridge*
Smith, Captain William, of the Royal Navy
Smith, John, Eſq. *Drapers-hall*

Smith,

Smith, Henry, Eſq. *Drapers-hall*
Smith, Mr. Richard, *Crown-court, Cheapſide*
Smith, Mr. Edward, *Broad-ſtreet, City*
Smith, George, Eſq. *Lombard-ſtreet*
Smith, Mr. John James, *Bunhill-row*
Soane, John, Eſq. *Lincoln's-inn-fields*
Soley, Mr. Thomas Apreece, *Bloomſbury*
Somerſet, Capt. John, *Howland-ſtreet*
Songa, Anthony, Eſq. *Copthall-court, Throgmorton-ſtreet*
Sparks, Mr. Robert, *Alderſgate-ſtreet*
Spilſbury, Mr. Thomas, *Snow-hill*
Spilſbury, Mr. William, *ditto*
Splitgerber, Mr. John Chriſtian, *Church-court, Walbrook*
Splitgerber, Mr. Frederick, *ditto*
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Stainſby, John Alexander, Eſq. *Southampton-ſtreet, Bloomſbury*
Stanhope, Walter Spencer, Eſq. *Upper Groſvenor-ſtreet,*
Stanley, George, Eſq. *Ponſonby-hall, Cumberland*
*Steele, Joſhua, Eſq. *Barbadoes*
Steer, Charles, Eſq. *Church-ſtreet, Spital-fields*
P††Steers, John William, Eſq. F.A.S. *Inner Temple*
††Stephens, Francis, Eſq. F.R. and A.S. Commiſſioner of the Victualling Office, *Adelphi*
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Street, Mr. James Wallis, *Bucklersbury*
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P Supple, Richard Brooke, Esq. F. R. S.
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T.

**Thanet, Sackville Earl of
Tabrum, Mr. Arthur, *Aveley, Essex*

Tabrum,

Tabrum, Mr. Robert, *Gracechurch-ſtreet*
P Talbot, Thomas Manſel, Eſq. *Penrie-caſtle, Glamorganſhire*
Tanner, William, Eſq. *Monmouth, and Queenhithe*
††Tate, William, Eſq. *Pimlico*
Taitt, William, Eſq. *Cardiff*
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Templer, James, Eſq. *Stover-lodge, Devon*
P Teixeira, Abraham, David, Eſq *Mincing-lane*
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Thomſon, Alexander, Eſq. *abroad*
P Thompſon, William, Eſq. *Leeds, Yorkſhire*
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Thorkelin, Grime, Johnſon, LL.D. *Copenhagen*
Timſon, William, Eſq. *Tooting*
Tomlins, Mr. Thomas, *Lambeth-Marſh*
Topham, Edward, Eſq. *Weymouth-ſtreet*
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Towne, Mr. Francis
††Towry, George Philips, Eſq. Commiſſioner of the Victualling-Office

P Travers,

P Travers, Mr. Joſeph, *Swithin's-lane*
Trenchard, John, Eſq. *Welbeck-ſtreet*
Trotter, Captain John, *Wimpole-ſtreet*
P Tunſtall, Marmaduke, Eſq. F.R. and A.S. *Wycliffe, Yorkſhire*
Turner, Charles H. Eſq. *Limehouſe*
Turner, Thomas, Eſq. *Caughley-place, near Sheffnal, Shropſhire*
Turner, John Frewen, Eſq. *Cold Overton, Leiceſterſhire*
P Tyers, James, Eſq. *Little Eaſtcheap*
Tyſon, Mr. James, *Tooley-ſtreet*

U.

P Uxbridge, Henry Earl of, F. A. S.
Udney, Robert, Eſq. F.R. and A.S.

V.

P Valencia, Richard Lord Viſcount
Vernon, George Venables, Lord, *Park-place*
Veltheim, His Excellency Baron
Valangin, Francis, M. D. *Hermes-hill*
Valpy, the Rev. Richard, D. D. and F. A. S. *Reading, Berks*
Vandercom, Joſeph Fitzwilliam, Eſq. *Buſh-lane, Cannon-ſtreet*
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Vaughan, William, Eſq. *Mincing-lane*
Vernon, John, Eſq. *Bedford-ſquare*
Vernet, Monſieur, Sculptor, *Paris*
Vidal, Emerie, Eſq. *Brentford*
Vivian, John, Eſq. *Gray's-inn*

W.

P Warwick, George Earl of, F.R. and A.S.
P Winchilſea, George Earl of, F.A.S.
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P Webb, Sir John, Bart. F.R. and A.S.
P Willes, Sir Francis, Kt. *Cheſterfield-ſtreet*
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Walker, Mr. Thomas, *Epſom*

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Walker, Joſhua, Eſq. *Rotherham*
Waller, Charles, Eſq. *Weſt Wickham, Kent*
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P Ward, Ralph, Eſq. *Great Portland-ſtreet*
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Webb, Francis, Eſq. *Bedford-ſtreet, Bedford ſquare*
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Wedgwood, Joſiah, Eſq. *Etruria, Staffordſhire*
Wedgwood, Thomas, Eſq. *ditto*
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††White, John, Eſq. *Mary-le-bone*

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White, William Wood, Eſq. *Walthamſtow*
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Wiedieu, William De, Eſq. *Riga, in Livonia*
Wilkins, Jeffery, Eſq. *Brecon*
Wilkinſon, John, Eſq. *Broſeley, Shropſhire*
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Williamſon, General Adam
P††Willis, William, Eſq. *Lombard-ſtreet*
†Willock, John, Eſq. *Golden-ſquare*
Wilſon, Mr. George, *Bedford-ſtreet, Covent-garden*
Wilſon, Mr. Edward, *Strand*
Wilſon, Thomas, Eſq. *King-ſtreet, Golden-ſquare*
Wilſon, Thomas, Eſq. *Gower-ſtreet*
Wilſon, Matthew, Eſq. *Red-Lion-ſquare*
Wilſone, Mr. William, *Baſinghall-ſtreet*

Winck-

Winckworth, Benjamin, Eſq. *Welling, near Dartford, Kent*

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P Zachary, John, Gent. F.A.S. *Arely, Worceſterſhire*

INDEX.

A.

	Page.
ACORNS, premiums offered for planting	4
adjudged for	119
Plantation of	120
How managed	ibid
Why Wheat ſown on the Land	121, 123
Advantage of trenching	123
How beſt made	124
AGRICULTURE, premiums in	4
Papers in	119
Board of, preſent from	274
ALDER, premiums offered for	16
APPLE TREES, method uſed to deſtroy inſects	174
ANTIQUARIES, Society of, preſent from	274
ANTIS, Mr. bounty to	233, 271
ARABLE LAND, premium for aſcertaining the component parts of	44
ASH, premiums offered for	18

B.

BAILEY, Mr. John, preſent from	276
BALL, Mr. John, Gold Medal to	178, 268

BANCROFT, Dr. preſent from 274
BARBER, Mr. John Thomas, Silver Medallion to 270
BARILLA, premium offered for making 60
BATH, Agriculture Society, preſent from 276
BEANS and WHEAT, premiums offered for culture of 31
BEQUEST, form of 116
BIRD, Thomas, certificate of Oſiers, ſigned by 132
BLOCK TIN. See Tin.
BOLTS, premium for driving, into Ships 94
BORER, inſect ſo called, premium offered for deſtroying 105
BOTANIC GARDEN, premium offered for 107
BOWLER, Mr. William, bounty to 250, 271
BREAD-FRUIT TREE, premiums for Plantations of 102
BRAMLEY, Richard Ramſden, letter from 201
BROWNLOW, Lord, premium to 130, 268
BROWNE, H. certificate ſigned 228
BUCKNALL, Thomas Skip Dyot, Eſq. letters from, on Orcharding 160

C.

CALVERT, Mr. William, his account of the Plantations of Oſiers made by Samuel Crawley, Eſq. 151
CANDIDATES, directions to 111
CANDLES, premium for making from Reſin 64
CANKER, uſe of medication in preventing, on Fruit Trees 169
Hog's Lard in removing 171
CATERPILLARS. See Hops
Letter on preventing 173
General Obſervations on 173

CATERPILLARS, how their eggs are concealed 175
Proper time for deſtroying 176
CHAPMAN, William, certificate ſigned 152
CHEMISTRY, Dying, and Mineralogy, premiums offered for 60
Paper in 221
CHESNUTS, premiums offered for ſowing 8
CHURN, deſcription of Mr. Bowler's 251, 253
CINNAMON, premium offered for 101
CLAY SOILS, letter on culture of 195
What crops on, recommended ibid. 198
How beſt managed 197
CLOTH, for Hop-ſtalks, premium for 88
COCKCHAFER, premium for deſtroying the grub of 56
COLONIES, premiums for advantage of 100
CONDITIONS, GENERAL 112
COUNTIES, premiums for ſurveys of 81
CRANMER, Mr. Charles, Silver Pallet to 270
CRAWLEY, Samuel, Eſq. Silver Medal to 130, 268
Letter from 143

D.

DRAG for CARTS, deſcription of a 262
DRAINING LAND, premium offered for 47
DRAWING, premiums for 77, 78
Outlines 79
Landſcapes 80
Machines ibid.
Hiſtorical 81
DRILL HUSBANDRY, premium offered for 32
DRY ROT in TIMBER, premium for preventing 69

E.

EARTHEN WARE, premium for glazing 73
EDIS, William, certificate signed by 132
EDWARDS, Samuel, Esq. letter from 132
ELM, premiums offered for planting 10

F.

FADEN, Mr. William, present from 277
FANSHAWE, Miss Elizabeth Christiana, Silver Pallet to 270
FEATHERS. See Oil
FIR, Silver, premiums offered for planting 13
FIRES, premiums offered for extinguishing 96
FISHING NETS, premium for weaving 88
FLY on SHEEP, premium for curing the ill effects of 58
FORD, John, certificate signed 194
FOULDS, Mr. John, Gold Medal to 241, 271
FRUIT-TREES, premiums offered for preventing blights on 27
See Orchard
Best soil for 168
System for pruning and medicating 170
See Caterpillars
FULHAME, Mrs. present from 275

G.

GOODS, premium for Machine for loading 95

H.

HAMPSON, William, Esq. thanks to 172
HAND-MILL, premium for 96
HARPER, Mr. premium to 182, 268
HAY, premium offered for making in wet weather 41
HEATHCOTE, Rev. Henry, certificate signed 187
HOE, premium offered for an improved 55
HOLT, John, certificate signed 187
HOLTS, Saxon word for island 143
HOPS, premium for destroying the fly on 57
HARRABIN, Richard, certificate signed 159
HORSES, premium offered for Stall-feeding 40
preventing turning in Mills 97
HUTCHINSON, Mr. William, present from 274

I.

JAMES, Jenkinson, certificate signed 194
JENKINSON, John, certificate signed, relating to Mr. Rawlinson's Plantation 159
Letters on improving Land 188
Bounty to 188, 268
INSECTS, Letters on destroying in Orchards 172
IRON, premium offered for fine Bar 70

K.

KALI, for Barilla, premium offered for 103
KIDS, of Furze or Gorze, what, and use of 144
See O

KIDS, nourifhment fupplied to the Oſiers from 151
KILDERBEE, Samuel, Eſq. Gold Medal to 119, 268
KNEEBONE, Mr. Joſeph, bounty to 254, 272

L.

LAND near GREAT TOWNS, letter on managing 201
What weeds ariſe on 204
Price of improving. See Leeds
LAND, gaining from the Sea, premium offered for 52
LAND LYING WASTE, premium for improving 48
Account of improving 182
Crops on, when improved 184
Increaſed value of 186
LARCH, premiums offered for planting 11
thrive on rocky Land 155
diſtance at which planted ibid.
LAND LYING WASTE, improvement of, at Yelland, in Lancaſhire 189
Nature of ibid.
Paring and burning 190
Deep ploughing recommended, ib.
What crops ſown on 191, 193
Compoſt preferable to Lime, on 191
A wood formed on, and what trees thrive beſt 192
Brackens how deſtroyed, 190, 193
Particular advantage of the improvement 194
LEEDS, letter on managing Lands, near 202

LEEDS, price of improving Land near 205
LETTSOM, Dr. John Coakley, preſents from 276
LOCKETT, Mr. John, thanks to 207
Letter on Potatoes ibid.

M.

MACHINE for dibbling Wheat, premium for 53
reaping or mowing 54
raiſing Ore, &c. premium for 96
Water, premium for 97
clearing Rivers 98
MANUFACTURES, premiums for encouraging 87
Paper in 231
MANURES, premiums offered for 49
MARCH, Mr. preſent from 277
MARLING, firſt improvement on Land lying waſte 183
MASQUERIER, Mr. John James, Silver Pallet to 270
MECHANICKS, premiums for inventions in 93
Papers in 239
MEDICAL SOCIETY, preſent from 275
MEMBERS, Contributing, Liſt of 285
METAL ROPE, or Chain, premium for 95
MIDDLETON, Mr. John, Silver Medal to 195, 269
Letter from, on Clay Soils, ibid. 200
MODELS and MACHINES, Liſt of 278
Moss, what, and how beſt remedied on Fruit-Trees 167, 168

N.

N.

NATURAL HISTORY, premium for 85
NEVILL, George, certificate ſigned 152
NURSERY, management of Fruit-Trees in the 167
NUTMEGS, premiums offered for 100

O.

OAK TIMBER in COMPASS FORMS, premiums for 7
OAKS, premiums offered for raiſing, 5
Beſt method of raiſing 6
Thought not to do ſo well if tranſplanted 125
Calculation of the advantage of a Plantation of, 123
Particular care in planting 154
Letter on forming in Compaſs-ſhapes 210
Rules for training 212
Age and ſeaſon beſt fitted for training 218
OFFICERS, &c. Liſt of 281
OIL, premium offered for refining 65
clearing feathers from 66
ORCHARDS, ought not to be ploughed 161
Beſt made on old hop-grounds ibid.
What manure ſeems beſt for 163
Eſſential circumſtance in forming ibid.
Kentiſh, what Fruits beſt produced in 164
When young, their Fruit ſhould be taken off 165. See Inſects
Premiums offered for planting 22
Shelter neceſſary to 161
ORCHARDING, letters on. See Bucknall

OSIERS, premiums offered for planting 15
bestowed for 130
See Wiers
See Lord Brownlow
John Phillips, Esq.
Samuel Crawley, Esq.
How Land prepared for planting 131
Quantity planted on Lord Brownlow's estate, in 1794 132
Length of shoots of ibid. 150
Number of plants, per acre 135, 149
Considerable Plantations of, at Littleport ibid.
Best soil for ibid.
Method of preparing the Land for 136
Expence of ibid.
Length of the sets, 137.—Age of sets, ibid.
Use of sowing Cole-seed to protect the young plants 138
Injured from burning Land 139
Value of the Plantations, 140—Seedling, 150
Planted on Land gained from the Trent 142
At what age cut 150

P.

PAINT, substitute for the basis of 71
PAPER from Raw Vegetables, premium for 90
PARKER, S. W. certificate signed 227
PASSAGE to South Sea by Land, premium offered for discovering 105
PHILLIPS, John, Esq. premium to 130, 268
Account of his plantation of Osiers, 135, 140
PILES, Engine for cutting under water, described 241

POLITE ARTS, premiums for promoting 76
Conditions annexed to 85
POOR, premium for maintaining the 92
POTATOES, premium offered for comparative culture of 35
increaſed culture of 36
feeding Cattle and ſheep 37
Great price given for Land for planting 202
See Lockett.
Quantity of, got from from ſixty-one ſhoots, 208
Method of procuring plants of ibid.
PREMIUMS, Honorary, for Drawing 76, 77
PRINTING-PRESS, deſcription of a new 243, 249
PRESENTS, received, Liſt of 273
PROVISIONS, premium for preſerving 67

R.

RANDALL, Mr. thanks to 210
RAWLINSON, Thomas, Eſq. Gold Medal to 153, 268
Account of his Plantations ibid.
Nature and value of Land on which the Plantations are made 154
Manner of incloſing ibid.
Liſt of trees planted by 156
RENWICK, Mr. preſent from 273
REWARDS, beſtowed, Liſt of 268
RICHARDSON, Mr. Thomas, preſent from 275
RIDLEY, Mr. Joſeph, bounty to 243, 272
ROCKS, premium for boring 98
ROOTS and HERBS, premium for culture of 38
ROT in SHEEP, premium for cure of 57

ROYAL SOCIETY, preſents from 273
RHUBARB, premium offered for cultivating 42
curing 43
adjuged for curing 178
Mode of culture 179
cure 189

S.

SHADWELL, Henry, Eſq. preſent from 277
SILK, premiums for 87
Machine for carding, premium for ibid.
SIMPSON, Miſs Frances Eleanor, Silver Medal to 269
SMOKE, premium offered for deſtroying 63
condenſing ibid.
SOILS, planting boggy or moraſſy, premiums offered for 21
SPINNING-WHEEL, further improved 233
Chief advantages of ibid. 238
STARCH from Horſe-cheſnuts, premium for 90
STEAM, increaſing, premium offered for 68

T.

TANSLEY, Henry, certificate ſigned 140
TARES, advantage of cultivating 195
What quantity ſhould be ſown on ſtrong ſoils 196
Hay made from, value of 197
TIMBER, preventing dry-rot in, premium for 69
TIMBER TREES, premiums offered for 20
Premiums offered for ſecuring plantations of 26
TIN, premium for refining 72

TODD, William, certificate ſigned by 133
TRANSIT INSTRUMENT, premium for 93
TREACLE, premium for ſugar from 61
TREES, for uſe when expoſed to the weather, premiums offered for 27
TURNEPS, premium offered for culture of 33
TURNEP-ROOTED CABBAGE, premiums for 34

V.

VAUGHAN, William, Eſq. preſents from 274
VEGETABLE FOOD, premium offered for 33
VEGETABLES, premium for preſerving ſeeds of 60

W.

WADSTROM, Mr. preſent from 276
WARD, Mr. Archer, Gold Medal to 221, 269
Account of his machine for preventing the ill effects of White Lead 229
WASTE MOORS, premiums for improving 50
WATER, premium for preſerving freſh, ſweet 62
purifying 74
preventing freezing 96
WATTS, Miſs Harriet Letitia, Gold Medal to 269
WATTS, Miſs Suſanna, bounty to 271
WELLMENS, Mr. bounty to 272
WHALES, premium offered for taking 93
WHEAT, premiums for comparative culture of 29, 30
WHEEL CARRIAGES, premium for improving 97
WHITE LEAD, premium for preparing 71

WHITE LEAD, Method of avoiding the duſt in preparing 221
Uſual method of preparing, deſcribed 222
Deſcription of the improved method of preparing 224
Samples of, reſerved 226
Explanation of Machine for preparing 229
WICKS for CANDLES or LAMPS, premium for 89
WIERS on River Trent 141
Oſiers planted on ibid.
WILLOW, Upland or Red, premiums for planting 15
WIRE-WORM, premium for deſtroying 56
WISSETT, Robert, Eſq. preſent from 276
WYATT, Mr. John, preſent from 276

Y.

YEAST, premium for preſerving, or Subſtitute for 67

DIRECTIONS TO THE BOOKBINDER.

PLACE the Print from the Statue of Narciſſus, as the Frontiſpiece to the Volume.

The Print of Mr. Crawley's Oſier Holts, to face page 141.

The Print of Mr. Archer Ward's Machine for preventing Duſt ariſing in the Manufacture of White Lead, to face page 229.

The print of Mr. Foulds's Machine for cutting Piles under Water, to face page 241.

The Print of Mr. Joſeph Ridley's Printing Preſs, to face page 243.

The Print of Mr. William Bowler's improved Churn, to face page 253.

EDWARD HOOPER ESQ.R F.R.S.

Vice President of the Society for the encouragement of

Arts, Manufactures, & Commerce.

Engraved by W.m Evans from the original Picture painted by Fa.s Bacon R.A.

Professor of Painting to the Royal Academy.

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WITH THE

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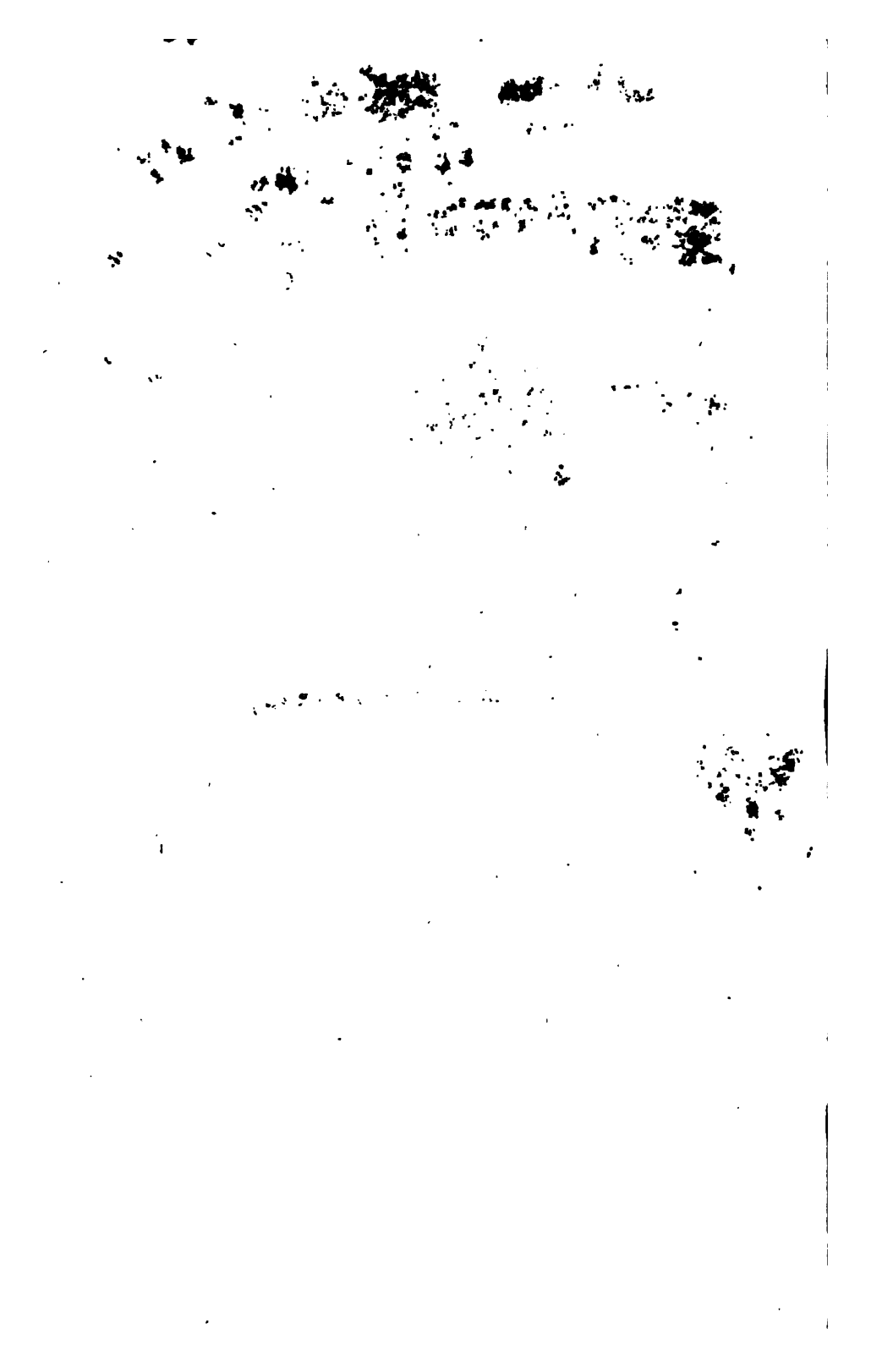

PREFACE.

THE Frontiſpiece to this Book is an exact reſemblance of the late Edward Hooper, of Hern Court, in the county of Dorſet, Eſq. engraven after a picture painted, in 1778, by James Barry, Eſq. R. A. Profeſſor of Painting to the Royal Academy.

Mr. Hooper was an early Member of this Inſtitution, and, during thirty years, an aſſiduous and active Vice-Preſident of the Society. In conſideration of the ſervices he had uniformly rendered them, by his thorough acquaintance with and ſtrict obſervance of their rules and orders, as well when preſiding at their meetings, as on all other occaſions, their Gold Medal was voted to him in the year 1767; and his name continued in the liſt of their Preſidency to his death, which happened on the 6th day

of September, 1795, in the 95th year of his age, although, for ſome years preceding that period, the Society, in conſideration of his advanced age, had diſpenſed with his perſonal attendance.

By his will, Mr. Hooper bequeathed a legacy to the Society, who, in return for that, and the many important advantages they had received from his attention to their intereſt, have judged proper to perpetuate his memory, by prefixing a likeneſs of him to this volume of their Tranſactions.

The arrangement of the ſeveral parts of this volume will be found ſimilar to many of the foregoing ones: and, as the Premiums offered this Seſſion form the firſt part, it will not be improper to enumerate ſome new objects in the various claſſes into which the buſineſs is divided, and ſtate ſome of the reaſons that have induced the Society to add them to their former liſts.

The firſt new Premium that occurs, is that offered, Claſs 84, for diſcovering a method of preventing the ill-effects of Blights on Fruit-trees, an object highly deſerving

ſerving the attention of the Public. The next in courſe is offered for the Culture of Parſneps, Claſs 102. It is now many years ſince Mr. Budd, of Wandborough, near Guildford, Surry, received a reward for his account of the advantage he had found, by employing Parſneps in feeding Hogs, Cows, and Horſes; and, in the courſe of the laſt ſeſſion, the Society having been informed of ſome remarkable ſucceſs that had attended the feeding Sheep with them, have thought it adviſeable to offer a Premium on this head, that the benefits ariſing from the uſe of this root may be more known; and, when the utility is fully confirmed, the practice may become more general throughout the kingdom.

The advantages that are known to ariſe from the judicious uſe of Water Meadows, have induced the Society to offer a Premium for the moſt ſatisfactory account of the principles on which they ſhould be formed, as may be ſeen, Claſs 112.

At Claſs 139 will be found a Premium offered for an Account, verified by trial, of

a Method of protecting Sheep from the Inclemency of the Weather, by Hovels; a practice which has prevailed in ſome foreign countries, and has in part been adopted in our own; but has not yet been ſufficiently extended in this kingdom, to have its good effects clearly and decidedly aſcertained.

Although the Premium offered this ſeſſion for the increaſing the Culture of Potatoes, is not in fact new, yet the reader will find it conſiderably changed from that printed in the Volume of 1795, at which time the well-known, and in ſome degree juſtifiable, alarms ſpread through the kingdom, on the danger of a want of bread-corn, occaſioned in the Society an ardent deſire to increaſe the culture of Potatoes, by offering very conſiderable Premiums for the growth of thoſe roots on land on which they had not been cultivated for a long ſeries of years. How thoſe Premiums came not to be claimed on a more extenſive ſcale than they were, is not neceſſary now to be mentioned; but the honour of the Society has been preſerved, by paying the Premium for no more than

than twenty-four acres, which was the only claim properly produced before them.

In the Claſs of Chemiſtry, ſome rewards are offered for the diſcovery of a method of procuring ardent Spirits and Starch from materials not the food of men or cattle (ſee Claſſes 156 and 157). Theſe would undoubtedly prove, if found practicable, objects of very high importance. The improvement of a Black Dye on Cotton, and a mode of preſerving Wrought-Iron from Ruſt (ſee Claſſes 172 and 173), have alſo been conſidered as deſerving the attention of the Society; and, on the peruſal of the following ſheets, it will be found that Premiums are now firſt offered for the obtaining thoſe objects.

In the Claſs of Mechanicks, two new Premiums have been this year inſerted in the liſt. The one, Claſs 210, for inventing a Mill to anſwer the purpoſe of grinding corn for the uſe of pariſhes, or private families. It has long been the wiſh of the Public to procure ſuch a mill, and the Society were formerly much occupied in en-

deavouring to obtain one, though without effect; but as, from the late high price of wheat, it has been ſuſpected that adulterations of that grain have taken place, and reiterated applications have been made to the Society to again endeavour to obtain a machine well-adapted to the purpoſe; they have thought proper to renew the premium for ſuch a mill, which undoubtedly, if obtained, will be highly uſeful, and fulfil in a great degree the wiſhes of the Public.

The other new Premium under this Claſs unites with the generoſity of the Society evident marks of their humanity—it is that for diſcovering a mode of Cleanſing Chimneys from Soot, without employing children in the flues, in the manner now practiſed, which is known to be always attended with great hardſhips, and frequently with fatal accidents to the children ſo employed (ſee Claſs 218). If, by means of the premium offered for this purpoſe, a proper and convenient mode ſhould be diſcovered, and adopted, the ends both of the Society and the Public will be fully anſwered.

There have been produced to the Society, during their late ſeſſion, ſome ſpecimens of Cloves, the growth of the province of Guiana in America, and ſome of the Weſt-India Iſlands; this has induced the Society to offer Premiums for the production of that valuable Spice in any of the Weſt-India Iſlands, ſubject to the Crown of Great-Britain, as will be found in Claſs 223 and 224 of the following book of Premiums.

Having thus given a ſhort account of the new Premiums offered this ſeſſion, it may be thought proper here to mention, that a new æra may this year be aſſumed in the annals of this Society; for, as it appeared to the Society, at the time of their inſtitution, in 1754, that there exiſted in that part of Great-Britain called Scotland, a Society for the Encouragement of Arts, Manufactures, and Commerce, all Premiums offered by this Society have, till the preſent year, been confined to that part of Great-Britain called England, the dominion of Wales, and Town of Berwick upon Tweed, unleſs expreſsly mentioned to the contrary;

contrary; but, during the late ſeſſion of this Society, it has been reſolved, that all their Premiums ſhall henceforth be extended over the northern as well as the ſouthern parts of this Iſland, and the whole of the inhabitants of Great-Britain admitted to become Candidates for the Rewards offered. To this liberal and diſintereſted procedure, is, in ſome degree, to be attributed the great influx of Members which has happily taken place during the laſt ſeſſion.

The peruſal of the ſeveral Papers, which form the moſt conſiderable part of this volume, will, it is preſumed, furniſh to the reader ſome amuſement and information; as therein may be ſeen, that plantations of various kinds of trees are going on in different parts of the kingdom on an extenſive ſcale, as will appear by the Papers from James Denton, Eſq. the Rev. John Robert Lloyd, and Thomas Richardſon, Eſq. The Papers inſerted in this volume, in addition to thoſe already printed, on Orcharding, by Thomas Skip Dyot Bucknall, Eſq. will,

it is believed, throw further light on that ſubject, and tend to confirm and eſtabliſh his doctrine on that branch of Agriculture.

The Paper on the ſucceſſive Culture of Beans and Wheat, by Lewis Majendie, Eſq. will ſhew the advantage of that manner of managing land, and be a means of extending the practice to thoſe parts of the kingdom where it has not hitherto been introduced.

The facility of the cultivation and cure of that valuable root Rhubarb, is fully evinced by the accounts from Mr. Davis and Mr. Aſhton; and there can be little doubt of the plant getting ſo much into culture in this kingdom, as ſoon to render any importation of that root from abroad unneceſſary.

The Papers of Mr. Richard Moyle will ſhew a judicious mode practiſed by him for ſecuring Land from the Inundation of the Sea, which muſt prove highly ſatisfactory to the reader.

The many Claims this year produced to the Society for the Premium offered for Draining

Draining Land, prove that uſeful part of Huſbandry to be extending over many parts of the kingdom, which cannot fail producing the moſt valuable effects, particularly on ſuch ſoils as that deſcribed in Mr. Crockitt's Papers, which, from a ſtate not only of ſterility, but danger to the neighbourhood, are thus rendered in a peculiar degree prolific and uſeful.

The manner of conſtructing Harrows, as recommended by Mr. Knight, of Great Bardfield, it is preſumed, will be found an uſeful improvement of that neceſſary implement of huſbandry; and the ſimple, yet efficacious method of relieving Cattle that are ſwollen, or, in the language of the huſbandman, HOVEN, by eating too voraciouſly of freſh clover, or other ſucculent food, promiſes to be of the firſt importance to all graziers, and others concerned in the management of cattle or ſheep.

In this volume, under the article Chemiſtry, are inſerted ſome Papers relative to the preparing Opium from Poppies grown in England: for, although the Society have invariably

invariably avoided interfering in matters relative to Medicine, yet, as has been already ſeen in the caſe of Rhubarb, they have conſidered the obtaining Drugs in a ſtate of purity, a fit object of their attention; and this ſeſſion have beſtowed a handſome reward on Mr. Ball, of Williton, for the diſcloſure of his method of preparing Opium from Poppies grown in this climate. When it is conſidered of how much importance it is to obtain drugs, of ſuch efficacy as Opium, in the higheſt ſtate of purity, it muſt prove ſatisfactory to every practitioner in phyſic, to obſerve, that the time ſeems approaching, when a drug of ſuch conſequence as Opium may be brought into uſe in a pure and unſophiſticated ſtate.

From a full conviction that the uſeful arts and commercial intereſts of the country would be moſt eſſentially promoted, by diſcovering and perfecting thoſe machines that ſhorten labour and expedite work, an invariable attention has been conſtantly paid to ſuch mechanical contrivances as were moſt likely to conduce to thoſe ends; this occaſioned a Premium to be offered during many

many years, for weaving Fiſhing Nets in a Machine or Loom: at length ſuch a Machine has been obtained; and a Plate and Deſcription of it will be found under the Claſs of Manufactures, in this volume. Whoever peruſes the following ſheets, will therein find, under the head of Mechanicks, a very ingenious contrivance by a Lady, for applying, in a more efficacious manner than is commonly practiſed, the power of men to the working the Croſs-bar Lever, and which has been ſucceſsfully put in practice n a quarry where pieces of the rock, of conſiderable ſize and weight, were neceſſary to be removed.

The great deſtruction of hempen ropes in large works, and more particularly in founderies where maſſes of metal, in a hot ſtate, are frequently to be removed, induced the Society, ſeveral years ſince, to offer Premiums for the conſtruction of a Metal Rope or Chain that ſhould work well, and in all directions, over pulleys, and at the ſame time ſupport the load in perfect ſecurity: it will appear, that this object has

now

now been obtained; and a Cut of the Chain is annexed to the account, that the Public may be enabled to judge of its efficacy and the nature of its conſtruction.

Among many important articles that have engaged the attention of the Society, for the advantage of the Britiſh Colonies, it is well known that the introduction of the Bread-fruit Tree was one of the principal: this fruit had been celebrated by all the navigators of the South Sea, from Dampier to Captain Cook. Several plants were at length conveyed to the Iſlands of the Weſt-Indies by the laudable perſeverance of Capt. Bligh, whoſe hiſtory is well known, and who received the Gold Medal of this Society as the juſt reward of his merit: It is with peculiar ſatisfaction the Society have lately received, from their valuable correſpondent, Dr. Dancer, the keeper of the Botanic Garden, the following intereſting intelligence, in a letter dated Jamaica, February 1, 1796.

"It will, I aſſure myſelf, be highly ſatisfactory to the Society, to be informed, that

" that the Bread-fruit Trees, which ſo much " engaged their attention, are bearing very " plentifully; ſo that we ſhall ſhortly ex- " perience the full benefit of this import- " ant acquiſition."

Nor has the attention of the Society been only directed to the Colonies in the Weſt-Indies; for it will appear, that the moſt diſtinguiſhed mark of their approbation has this ſeſſion been given to Robert Wiſſett, Eſq. for having been principally inſtrumental in introducing the organzining Bengal Silk in England; from which there is every reaſon to expect great advantages will ariſe, not only to the inhabitants of Bengal and other parts of the Eaſt-Indies, but to the manufacturers of Silk in Great-Britain.

An examination of the Liſt of the Contributing Members, printed in this volume, will ſhew the flouriſhing ſtate of the Society, whereby they are enabled to fulfil the intention of the inſtitution; and again to invite the ingenious of both ſexes, to ſubmit to them their inventions and works; from

from whence they will be certain to receive every encouragement and reward; and thus not only ſecure to themſelves a due degree of honour and profit, but have alſo the ſatisfaction of their names being tranſmitted to poſterity, among thoſe who have been inſtrumental in promoting the true intereſts, the riches, and the glory of their country, by contributing to the increaſe and perfection of the Arts, the Manufactures, and Commerce of the kingdom.

CONTENTS.

	Page
Preface	
Premiums offered in 1796	1-113
Papers in Agriculture	116-249
Paper in Chemiſtry	253-270
Papers in Manufactures	273-292
Papers in Mechanicks	295-323
Paper in Colonies and Trade	327-330
Rewards beſtowed	331
Preſents received	339
Catalogues of Models and Machines	343
Liſt of Officers	347
Liſt of Members	351
Index	399

PREMIUMS

OFFERED BY THE

SOCIETY

FOR THE ENCOURAGEMENT OF

ARTS, MANUFACTURES,

AND

COMMERCE,

IN

THE YEAR M.DCC.XCVI.

TO THE

PUBLIC.

ADELPHI-BUILDINGS,
April 13, 1796.

THE chief objects of the attention of the Society for the Encouragement of Arts, Manufactures, and Commerce, in the application of their Rewards, are, Ingenuity in the ſeveral branches of the POLITE and LIBERAL ARTS, uſeful Diſcoveries and Improvements in AGRICULTURE, MANUFACTURES, MECHANICKS, and CHEMISTRY, or the laying open any ſuch to the Public; and, in general, all ſuch uſeful Inventions, Diſcoveries, or Improvements (though not mentioned in the Book of Premiums), as may appear to have a tendency to the advantage of Trade and Commerce. The Society therefore, in purſuance of their plan, propoſe to beſtow the following Premiums.

Premiums for Planting and Huſbandry.

Claſs 1. ACORNS. For having ſet, between the firſt of October, 1795, and the firſt of April, 1796, the greateſt quantity of land, not leſs than ten acres, with Acorns, with or without ſeeds, cuttings, or plants of other trees, at the option of the Candidate; and for effectually fencing and preſerving the ſame, in order to raiſe timber; the GOLD MEDAL.

2. For the ſecond greateſt quantity of land, not leſs than five acres, ſet agreeably to the above conditions, the SILVER MEDAL.

CERTIFICATES of ſetting agreeably to the above conditions, and that there are not fewer than three hundred young Oaks on each acre, to be delivered to the Society on or before the firſt Tueſday in November, 1796.

3. 4. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1797.

5, 6. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1798.

7, 8. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1799.

9. RAISING OAKS. To the perſon who ſhall have raiſed, ſince the year 1792, the greateſt number of Oaks, not fewer than five thouſand, either from young plants, or acorns, in order to ſecure a ſucceſſion of oak timber in this kingdom; the GOLD MEDAL.

10. For the next greateſt number, not fewer than three thouſand, the SILVER MEDAL.

CERTIFICATES that there were on the land, at leaſt the number of young Oak-trees required, in a thriving condition, two years after the planting, with an account of the methods purſued in making and managing the plantation, to be produced to the Society on or before the firſt Tueſday in January, 1797.

11, 12. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

13, 14. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1799.

15. ASCERTAINING THE BEST METHOD OF RAISING OAKS. To the perſon who ſhall aſcertain in the beſt manner, by actual experiments, the comparative merits of the different modes of raiſing

ſing Oaks for timber, either from acorns ſet on land properly grubbed and tilled; from acorns ſown at random among buſhes, fern, or other cover; or from young plants, previouſly raiſed in nurſeries, and tranſplanted; regard being had to the expence, growth, and other reſpective advantages of the ſeveral methods; the GOLD MEDAL.

The ACCOUNTS and proper CERTIFICATES to be produced to the Society on or before the firſt Tueſday in November, 1796.

16. The ſame premium is extended one year further. The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in November, 1797.

17. OAK TIMBER IN COMPASS FORMS. To the perſon who ſhall aſcertain, by actual experiments, the beſt method of training young Oaks, ſo as to form Compaſs Timber for Ship-building, the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES of the number of Oak-plants, not fewer than one hundred, that have been trained; and that they promiſe, in the opinion of perſons experienced in ſhip-building, to anſwer the purpoſe intended; to be delivered to the Society on or before the laſt Tueſday in December, 1805.

It is required that with the Certificates there be ſent particular accounts of the age of the trees, when they were begun to be trained, and the methods purſued in training them.

Should any perſon have already engaged in training Oaks for the above purpoſe, any information on the ſubject will be thankfully received by the Society.

18. CHESNUTS. For having ſown or ſet, between the firſt of October, 1795, and the firſt of April, 1796, the greateſt quantity of dry loamy land, not leſs than ſix acres, with Spaniſh Cheſnuts, with or without

without ſeeds, cuttings, or plants of other trees adapted to ſuch ſoil, at the option of the Candidate; and for effectually fencing and preſerving the ſame, in order to raiſe timber; the GOLD MEDAL.

19. For the ſecond greateſt quantity, not leſs than four acres, the SILVER MEDAL.

CERTIFICATES of ſowing or ſetting agreeably to the above conditions, and that there are not fewer than three hundred Cheſnut plants, in a thriving ſtate, on each acre, to be delivered to the Society on or before the firſt Tueſday in November, 1796.

20, 21. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1797.

22, 23. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1798.

24, 25. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1799.

26. ELM. For having planted the greateſt number of the Engliſh Elm, not leſs than eight thouſand, between the twenty-fourth of June, 1794, and the twenty-fourth of June, 1795; and for the having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

27. For the ſecond greateſt number, not leſs than five thouſand, the SILVER MEDAL.

CERTIFICATES of the having planted agreeably to the above conditions, that the plants were in a healthy and thriving ſtate

two

two years at leaſt after making the plantation, and ſpecifying the diſtance of the plants, to be delivered to the Society on or before the firſt Tueſday in April, 1797.

28, 29. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in April, 1798.

30, 31. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in April, 1799.

32, 33. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in April, 1800.

34. LARCH. For having planted out between the twenty-fourth of June, 1793, and

and the twenty-fourth of June, 1794, the greateſt number of Larch-trees, not fewer than five thouſand; and for having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

35. For the next greateſt number, not fewer than three thouſand, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they were in a healthy and thriving ſtate two years at leaſt after they were planted out, with a general account of the methods uſed in making the plantation, to be delivered to the Society on or before the laſt Tueſday in December, 1796.

36, 37. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1797.

38, 39. The ſame premiums are extended one year further.

CERTI-

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1798.

40, 41. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1799.

42, 43. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1800.

N. B. The Larch-trees may be either planted, mixed with other trees, or by themſelves, as may beſt ſuit the convenience of the planter.

44. SILVER FIR. For having planted out, between the twenty-fourth of June, 1792, and the twenty-fourth of June, 1793, in a mixed plantation of foreſt-trees, or ſeparate, according to the option of the Candidate, the greateſt number of Silver Firs,

Firs, not fewer than two thouſand; and for having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

45. For the next greateſt number, not fewer than one thouſand, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they were in a healthy and thriving ſtate two years at leaſt after they were planted out, with a general account of the methods uſed in making the plantation, to be delivered to the Society on or before the laſt Tueſday in December, 1796.

46, 47. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1797.

48, 49. The ſame premiums are extended one year further.

CERTI-

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1798.

50. OSIERS. To the perſon who ſhall have planted, between the firſt of January and the firſt of May, 1796, the greateſt quantity of land, not leſs than three acres, with thoſe kinds of Willows, commonly known by the names of Oſier, Spaniard, or New-kind, fit for the purpoſe of baſket-makers, not fewer than twelve thouſand plants on each acre; the GOLD MEDAL or TWENTY GUINEAS.

51. For the ſecond greateſt quantity of land, not leſs than two acres, the SILVER MEDAL, or TEN GUINEAS.

CERTIFICATES of the planting, and that the plants were in a thriving ſtate five months at leaſt after the planting, to be produced on or before the laſt Tueſday in November, 1796.

52, 53. The ſame premiums are extended one year further.

CERTI-

CERTIFICATES to be produced on or before the laſt Tueſday in November, 1797.

54. ALDER. For having planted, in the year 1793, the greateſt number of Alders, not leſs than three thouſand, on an eſtate the property of one perſon; the GOLD MEDAL.

CERTIFICATES of the number of plants, and that they were in a thriving ſtate two years at leaſt after being planted, to be delivered to the Society on or before the laſt Tueſday in December, 1796.

55. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1797.

56. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1798.

57. The

57. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1799.

58. ASH. For having ſown or ſet, in the year 1793, the greateſt quantity of land, not leſs than ſix acres, with Aſh for timber, with or without ſeeds, cuttings, or plants of ſuch other trees as are adapted to the ſoil; the GOLD MEDAL.

59. For the next greateſt quantity, not leſs than four acres, the SILVER MEDAL.

CERTIFICATES of the ſowing or ſetting agreeably to the above conditions, that there are not fewer than one hundred Aſh plants on each acre, in a thriving and healthy condition, two years at leaſt after the ſowing or ſetting, with a general account of the methods uſed in making the plantation, to be delivered to the Society on

or before the laſt Tueſday in December, 1796.

60, 61. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1797.

62, 63. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1798.

64, 65. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1799.

66, 67. The ſame premiums are extended one year further.

CER-

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1800.

68. TIMBER-TREES. To the perſon who ſhall have incloſed, planted, or ſown, the greateſt number of acres, not leſs than ten, with the beſt ſorts of Foreſt-trees adapted to the ſoil, for timber, between the firſt of October, 1792, and the firſt of May, 1794; the GOLD MEDAL.

An account of the methods uſed in making the plantations, and of the nature of the ſoil, together with proper Certificates that the trees were in a thriving and healthy ſtate two years at leaſt after making the plantation, to be delivered to the Society on or before the firſt Tueſday in November, 1796.

69. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1797.

70. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1798.

71. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1799.

N. B. With the above Foreſt-trees, the ſeeds, cuttings, or plants, of ſuch other trees as are adapted to the ſoil, and proper for underwood, may or may not be intermixed.

72. PLANTING ORCHARDS. To the perſon who ſhall plant an Orchard after

after the month of Auguſt in the year 1796, in the moſt judicious manner, not leſs than four acres, the GOLD MEDAL, or FIFTY GUINEAS.

73. For the next in merit, the SILVER MEDAL, or THIRTY GUINEAS.

The proof of the value of the improvement of the Orchard ſhall depend on the clear product of the greateſt quantity of fine marketable fruit, to be produced during three ſucceſſive years after the year 1812, and ſold at any public market in England or Wales. Each Perſon who propoſes to become a Candidate for theſe Premiums muſt ſend an account of the number of trees, their culture, pruning, and every circumſtance which can in the leaſt throw any light upon the ſubject; which information will be regiſtered, with a view to form a ſyſtem of rational culture.

74. And that Gentlemen may be induced to come forward, and make and preſerve

ſuch plantations,—The perſon who can produce an ORCHARD which, at the end of three years after planting, ſhall ſhew the greateſt promiſe of ſucceſs, ſhall be entitled to the GOLD MEDAL, or THIRTY GUINEAS.

The merits of the two firſt-mentioned Premiums being to be aſcertained by the fruit; the merit of the third Premium muſt be aſcertained by the judicious number of trees planted, the ſtraitneſs, clearneſs, and freedom of growth of the ſeveral trees; and that all the young branches run free, and at due diſtances from each other, without any galling or canker.

CERTIFICATES of the forming the Orchard, the ſoil and aſpect of the plantation, the ſale and product of the fruit for which the claims for the Premiums, Claſſes 72 and 73, are intended to be made, muſt be delivered to the Society on or before the firſt Tueſday in November, 1815; and the Certificate in claim of the Premium,

Claſs

Claſs 74, muſt be delivered to the Society on or before the firſt Tueſday in November, 1799.

N. B. However expert the Orchardiſt may be in general information and attention, much will depend on ſoil, expoſure, culture, and an eaſy communication to convey the fruit to market; for every field, however valuable in other reſpects, may not be proper for an Orchard.

Any wood the Orchardiſt may chooſe to raiſe for ſhelter to ſuch plantation, is not to be meaſured as part of the Orchard, as the wood will more than ſupport its own expence.

75, 76, 77. The foregoing Premiums for Orchards, from Claſs 72 to Claſs 74, incluſive, are extended one year further. The claims for the Premiums, Claſſes 72 and 73, to be delivered to the Society on or before the firſt Tueſday in November, 1816; and the Certificate in claim of the

Premium, Claſs 74, muſt be delivered on or before the firſt Tueſday in November, 1800.

*** *The Candidates for planting all kinds of Trees are to certify, that the reſpective Plantations are properly fenced and ſecured, and particularly to ſtate the condition the plants were in at the time of ſigning ſuch Certificates.*

Any information which the Candidates for the foregoing Premiums may chooſe to communicate, relative to the methods made uſe of in forming the Plantation, or promoting the growth of the ſeveral Trees, or any other obſervations that may have occurred on the Subject, will be thankfully received.

78. SECURING PLANTATIONS OF TIMBER-TREES. To the perſon who ſhall give to the Society the moſt ſatisfactory Account, founded on experience, of the moſt effectual and leaſt expenſive method of ſecuring young plantations of timber-trees, from Hares and Rabbits,

Rabbits, as well as ſheep and larger cattle, which at the ſame time ſhall be leaſt ſubject to the depredations of wood-ſtealers, the SILVER MEDAL, or TWENTY GUINEAS.

The ACCOUNTS, and CERTIFICATES of the efficacy of the method, to be produced to the Society on or before the firſt Tueſday in November, 1796.

79. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in November, 1797.

80. TREES FOR USE WHEN EXPOSED TO THE WEATHER. To the perſon who ſhall ſend the moſt ſatisfactory account and certificate, verified by experiments, to determine which of the following trees is of the greateſt utility for timber or poles, for uſe, when expoſed to the weather, *viz.*

Larch,

Larch,	Aſh,
Black Poplar,	Beech,
Spaniſh Cheſnut,	Silver Fir,
Willow,	Lombardy Poplar;
Alder,	

the GOLD MEDAL.

THE ACCOUNTS and CERTIFICATES to be produced on or before the ſecond Tueſday in December, 1796.

81. PREVENTING THE BLIGHT ON FRUIT-TREES. To the perſon who ſhall diſcover to the Society the beſt and moſt effectual method of preventing the Blight on Fruit-trees, ſuperior to any hitherto known or practiſed, and verified by actual and comparative experiments, the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be delivered to the Society on or before the ſecond Tueſday in November, 1796.

82. The ſame premium is extended one year further.

The

The ACCOUNTS and CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1797.

83. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1798.

N. B. It is expected that the above-mentioned comparative experiments have been made during three ſucceſſive ſeaſons, and in the ſame aſpect and ſoil; and that, contiguous to them, other trees of the ſame kind with thoſe for which the claim is made, have ſuffered in conſequence of the method not having been made uſe of to them.

84. TAKING OFF THE ILL EFFECTS OF BLIGHTS. To the perſon who ſhall diſcover to the Society the beſt and moſt effectual method of taking off the ill effects of Blights on Fruit-trees, ſuperior

to

to any hitherto known or practiſed, and verified by actual and comparative experiments, The GOLD MEDAL, or THIRTY Guineas.

The ACCOUNTS and CERTIFICTAES to be delivered to the Society on or before the firſt Tueſday in February, 1797.

85. COMPARATIVE CULTURE OF WHEAT. For the beſt ſet of experiments, made on not leſs than eight acres, four of which to be ſown broad-caſt, and four drilled, to aſcertain whether it is moſt advantageous to cultivate wheat by ſowing it in the common broad-caſt way, or by drilling it in equidiſtant rows, hoeing the intervals; the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS.

It is required that an account of the expence attending each mode of culture, with proper CERTIFICATES of the nature and condition of the land on which the experiments are made, together with an account of the produce of the Corn, be produced to

to the Society on or before the firſt Tueſday in February, 1797.

86. COMPARATIVE CULTURE OF WHEAT. For the beſt ſet of experiments, made on not leſs than eight acres of land, four of which to be ſown broad-caſt, and four dibbled, to aſcertain whether it is moſt advantageous to cultivate Wheat by ſowing it in the common broad-caſt way, or by dibbling it in equidiſtant rows, hoeing the intervals; the GOLD MEDAL, or the SILVER MEDAL and THIRTY GUINEAS.

It is required that an account of the expence attending each mode of culture, with proper Certificates of the nature and condition of the land on which the experiments are made, together with an account of the produce of the Corn, be produced to the Society on or before the firſt Tueſday in February, 1797.

87. BEANS AND WHEAT. To the perſon who ſhall have planted or drilled,

between the firſt of December, 1794, and the firſt of April, 1795, the greateſt quantity of land, not leſs than ten acres, with Beans, and ſhall have ſown the ſame land with Wheat in the ſame year, 1795; TWENTY GUINEAS.

It is required that an account of the ſort and quantity of Beans, the time of planting or drilling, and of reaping or mowing them, the produce per acre threſhed, the application of the ſtraw, the expence of planting or drilling, hand or horſe hoeing, the diſtance of the rows, and the quality of the ſoil, together with CERTIFICATES of the number of acres, and that the land was actually ſown with Wheat in the year 1795, be produced on or before the firſt Tueſday in November, 1796.

N. B. The Society have been informed, that Beans may be drilled or planted ſo early as the month of December, from whence may be derived the advantage of an early harveſt; in which caſe the ſtraw will be far

far more valuable than that from a later planting or drilling.

88. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the firſt Tueſday in November, 1797.

89. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the firſt Tueſday in November, 1798.

90. TURNEPS. For the beſt account of experiments made on at leaſt ſix acres of land, to determine the comparative advantage of the drill or broad-caſt method in the cultivation of Turneps; the GOLD MEDAL, or the SILVER MEDAL and TEN GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be delivered on or before the third Tueſday in March, 1797.

It is required that one half of the land be drilled, and the other half ſown broad-caſt.

91. VEGETABLE FOOD. For the beſt account, confirmed by experiments, of the Vegetable Food (Cabbages and Turneps excepted), growing in the months of March and April, that will moſt increaſe the milk in Mares, Cows, and Ewes, at that ſeaſon; provided ſuch food can be cultivated at an expence that will admit of its being applied to the above purpoſes; the GOLD MEDAL, or the SILVER MEDAL and TEN GUINEAS.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1796.

92. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1797.

93.

93. TURNEP-ROOTED CABBAGE. For having raiſed, and duly cultivated, Turnep-rooted Cabbage, in the year 1795, for the feeding Cattle or Sheep, on the greateſt number of acres, not leſs than ten, and giving an account of the ſoil, culture, expence, time and manner of feeding off, produce, and the effects on Cattle or Sheep fed with it; the GOLD MEDAL, or THIRTY GUINEAS.

94. For the next greater number of acres, not leſs than five, the SILVER MEDAL and TEN GUINEAS.

CERTIFICATES of the quantity of land, with the accounts, to be produced on or before the laſt Tueſday in October, 1796.

95. INCREASED CULTURE OF POTATOES. To the perſon who, in the year 1796, ſhall grow the greateſt weight of Potatoes fit for the table, per acre, on the greateſt quantity of land, not leſs than fifty acres, ſuch land not having been planted

with Potatoes within the laſt ten years; the GOLD MEDAL, or THIRTY GUINEAS.

96. For the greateſt weight per acre, on the next greateſt quantity of land, not leſs than twenty-five acres, the SILVER MEDAL, or FIFTEEN GUINEAS.

97. For the greateſt weight per acre, on the next greateſt quantity of land, not leſs than five acres, TEN GUINEAS.

CERTIFICATES of the quantity of land, and nature of the ſoil, with full accounts of the method of Culture and weight of Potatoes produced, to be delivered to the Society, on or before the third Tueſday in January, 1797.

98. POTATOES FOR FEEDING CATTLE AND SHEEP. To the perſon who, in the year 1795, ſhall have cultivated the greateſt quantity of land, not leſs than four acres, with Potatoes, for the purpoſe of feeding Cattle and Sheep; the GOLD MEDAL, or THIRTY GUINEAS.

CERTI-

CERTIFICATES, with ſatisfactory Accounts of the expence and manner of cultivating the Potatoes, and the application of them to the above purpoſes only, and the ſucceſs that has attended the uſe of them, to be delivered to the Society on or before the ſecond Tueſday in November, 1796.

99. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1797.

N. B. Should any Gentleman have already cultivated Potatoes for the purpoſes mentioned in the above advertiſement, any information from him on the ſubject will be thankfully received by the Society.

100. CULTIVATING ROOTS AND HERBAGE FOR FEEDING SHEEP, AND BLACK CATTLE. For the moſt ſatisfactory experiments, made between

Michaelmas, 1795, and the firſt of May, 1796, in order to aſcertain which of the following plants can be cultivated and houſed, or otherwiſe ſecured for winter-fodder, to the greateſt advantage, *viz.*

Turnep-rooted Cabbage,	Carrots,
Turnep Cabbage,	Parſneps,
Turneps,	Potatoes;

the GOLD MEDAL.

The ACCOUNTS, with proper Certificates, to be produced on or before the firſt Tueſday in November, 1796.

It is required that the above roots be taken off the land by the laſt day of October, 1795; that a crop of Wheat may be ſown in the ſame ground, and the particulars of the ſowing and planting, taking up, produce, preſerving, and application to the feeding Sheep and Black Cattle, be ſpecified. The comparative experiments muſt be made between two or more of any of the above-mentioned plants, and not leſs than one acre be cultivated with each particular kind of plant.

N. B.

N. B. Great advantage will ariſe to the Farmer occupying land in the neighbourhood of extenſive commons, from the conveniency of keeping large flocks of Sheep, and herds of Cattle, if the difficulty of ſupporting them through the winter was obviated by a due knowledge of this practice.

101. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1797.

102. PARSNEPS. To the perſon who, in the year 1796, ſhall cultivate the greateſt quantity of land, not leſs than five acres, with Parſneps, for the ſole purpoſe of feeding Cattle or Sheep; the GOLD MEDAL, or THIRTY GUINEAS.

CERTIFICATES of the quantity of land ſo cultivated, with a particular account of the nature and quality of the ſoil and pro-

duce, and alſo of the condition of the Cattle or Sheep fed with the Parſneps, and the advantages reſulting from the practice, to be produced to the Society on or before the ſecond Tueſday in February, 1797.

103. The ſame premium is extended one year further. The CERTIFICATES and ACCOUNTS to be produced on or before the ſecond Tueſday in February, 1798.

104. MAKING HAY IN WET WEATHER. To the perſon who ſhall diſcover to the Society the beſt and cheapeſt method, ſuperior to any hitherto practiſed, of making Hay in wet weather, the GOLD MEDAL, or THIRTY GUINEAS.

A full Account of the method employed, and of the expence attending the proceſs, with not leſs than fifty-ſix pounds of the hay; and Certificates that at leaſt the produce of ſix acres of land has been made according to the method deſcribed, and that the whole is of equal quality with the ſamples;

ſamples; to be produced on or before the firſt Tueſday in January, 1797.

105. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

106. CULTIVATING THE TRUE RHUBARB. For having raiſed, before the end of the year 1796, the greateſt number of plants, not leſs than ſix hundred, of Rheum Palmatum, or true Rhubarb, the GOLD MEDAL.

107. For the next greateſt number, not leſs than four hundred plants, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they ſtand at leaſt four feet aſunder, that they have been in a thriving ſtate during the preceding ſummer, with an account of the ſoil, culture, and aſpect, to be pro-

duced on or before the ſecond Tueſday in February, 1797.

108. ASCERTAINING THE COMPONENT PARTS OF ARABLE LAND. To the perſon who ſhall produce to the Society the moſt ſatisfactory ſet of experiments, to aſcertain the due proportion of the ſeveral component parts of Arable Land, in one or more counties in Great Britain, by an accurate analyſis of it; and who, having made a like analyſis of ſome poor land, ſhall, by comparing the component parts of each, and thereby aſcertaining the deficiencies in the poor ſoil, improve a quantity of it, not leſs than one acre, by the addition of ſuch parts as the former experiments ſhall have diſcovered to be wanting therein, and therefore probably the cauſe of its ſterility; the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the manurings, ploughings, and crops of the improved land, be the ſame after the improvement as before; and

and that a minute account of the produce in each ſtate, of the weather, and of the various influencing circumſtances, together with the method made uſe of in analyſing the ſoils, be produced, with proper CERTIFICATES, and the chemical reſults of the analyſis, which are to remain the property of the Society, on or before the laſt Tueſday in November, 1796.

It is expected that a quantity, not leſs than ſix pounds, of the rich, of the poor, and of the improved ſoils, be produced with the Certificates.

N. B. Among the methods or proceſſes made uſe of by Chemiſts, and called DRY or MOIST, the latter only appears adapted to the aſcertaining the reſpective proportions of the component parts of Arable earth.—Dr. Shaw, in his Chemical Lectures; Dr. Home, in his Principles of Agriculture; Dr. George Fordyce, in his Elements of Agriculture; and Sir Torbern Bergman, in his "Diſſertation ſur les Terres

Terres Géoponiques;" have treated on theſe ſubjects.

109. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the laſt Tueſday in November, 1797.

110. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the laſt Tueſday in November, 1798.

111. DRAINING LAND. To the perſon who, in the year 1796, ſhall have made the greateſt number of yards, not fewer than one thouſand, of Hollow Drain, of brick, ſtone, or ſuch like durable materials, with a clear paſſage for the water, of not leſs than ſix inches wide, for the improvement of land injured by water ariſing

ariſing from internal ſprings; the GOLD MEDAL, or THIRTY GUINEAS.

Particular accounts of the nature, quality, ſpontaneous produce, and yearly value of the Land before draining, and the ſuppoſed value afterwards; the nature and texture of the under-ſtrata whence the ſprings ariſe; the depth and width of the drains; the quantity of ſuppoſed water diſcharged; the expence of labour and materials per yard, in length, when finiſhed; a ſketch or plan of all the drains, and their ſeveral inclinations and diſtances from each other; with CERTIFICATES of the number of acres drained, and that the land was actually wet and ſpringy before draining, but dry and firm afterwards; to be produced to the Society on or before the third Tueſday in February 1797.

112. FORMING AND APPLYING WATER MEADOWS. To the perſon who ſhall produce to the Society the moſt ſatisfactory account, verified by practice, of

the principles on which Water Meadows ſhould be formed; and alſo point out the moſt valuable purpoſes to which they may be applied; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS to be produced to the Society on or before the third Tueſday in February, 1797.

113. IMPROVING LAND LYING WASTE. For the beſt Account of a method of improving any of the following ſoils, being land lying waſte or uncultivated, *viz.* Clay, Gravel, Sand, Chalk, Moor or Peat-earth and Bog; verified by experiments on not leſs than fifty acres of land; the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS, for each.

114. For the next greateſt quantity of land, not leſs than twenty-five acres, the SILVER MEDAL and TEN GUINEAS.

To

To be produced, with proper CERTIFICATES, on or before the ſecond Tueſday in December, 1796.

The ſoil, manner of improvement, expence, and product, are required to be fully explained.

115, 116. The ſame premiums are extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1797.

117, 118. The ſame premiums are extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1798.

119. MANURES. For the moſt ſatisfactory ſet of experiments, to aſcertain the comparative advantages of the following Manures, uſed as Top-dreſſings, on Graſs or Corn Land, viz. Soot, Coal-Aſhes, Wood-Aſhes, Lime, Gypſum, Night-ſoil; the

the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS.

It is required that the above experiments be made between two or more of the abovementioned Manures, and that not leſs than two acres of land be dreſſed with each Manure. An account of the nature of the ſoil, quantity and expence of the Manure, and crops, with CERTIFICATES, to be produced on or before the laſt Tueſday in February, 1797.

120. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the laſt Tueſday in February, 1798.

121. IMPROVING WASTE MOORS. For the improvement of the greateſt number of acres of Waſte Moor-Land, not leſs than one hundred, the GOLD MEDAL.

It is required that the land before improvement be abſolutely uncultivated, and

in

in a great meaſure uſeleſs; that in its improved ſtate it be incloſed, cultivated, and divided into fields, ſufficient for the uſe and occupation of a tenant.

CERTIFICATES of the number of acres, of the quality of the Moor ſo improved, of the mode and expence of the improvement, the ſtate it is in as to the proportion of graſs to arable, and the average value thereof, to be produced on or before the firſt Tueſday in February, 1797.

122. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1798.

123. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1799.

124. The ſame premium is extended one year further.

CERTI-

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1800.

125. GAINING LAND FROM THE SEA. To the perſon who ſhall produce to the Society an account of the beſt method, verified by actual experiment, of gaining Land from the Sea, not leſs than twenty acres, on the coaſt of England or Wales; the GOLD MEDAL.

CERTIFICATES of the quantity of Land, and that the experiments were begun after the firſt of January, 1791, to be produced to the Society on or before the firſt Tueſday in October, 1796.

N. B. The Society have been credibly informed, that land has been gained on the coaſt of Holland, by fixing rows of whiſps of ſtraw upright in the ſand, at about a foot diſtant from each other, or by fixing ſtakes at proper diſtances from each other, and wattling ſtraw-bands between them.

126. The ſame premium is extended one year further.

CERTI-

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1797.

127. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1798.

128. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1799.

129. MACHING FOR DIBBLING WHEAT. To the perſon who ſhall invent the beſt Machine, to anſwer the purpoſe of Dibbling Wheat, by which the holes for receiving the grain may be made at equal diſtances and proper depths, the grain regularly delivered therein, and effectually covered; the SILVER MEDAL, or TWENTY GUINEAS.

The MACHINE, with CERTIFICATES that at leaſt three acres have been dibbled by it, to be produced to the Society on or before the ſecond Tueſday in January, 1797. Simplicity and cheapneſs in the conſtruction will be conſidered as principal parts of its merit.

130. MACHINE TO ANSWER THE PURPOSE OF REAPING OR MOWING CORN. For inventing a Machine to anſwer the purpoſe of mowing or reaping Wheat, Rye, Barley, Oats, or Beans, by which it may be done more expeditiouſly and cheaper than by any method now practiſed, provided it does not ſhed the corn or pulſe more than the methods in common practice, and that it lays the ſtraw in ſuch a manner as that it may be eaſily gathered up for binding; the SILVER MEDAL, or TEN GUINEAS.

The MACHINE, with CERTIFICATES that at leaſt three acres have been cut by it, to be produced to the Society on or before the ſecond Tueſday in December, 1796. Simplicity

Simplicity and cheapneſs in the conſtruction will be conſidered as principal parts of its merit.

131. IMPROVED HOE. To the perſon who ſhall produce to the Society the moſt improved or beſt-conſtructed Horſe or Hand Hoe, ſuperior to any hitherto in uſe, for the purpoſe of clearing from weeds, and looſening the ſoil in the intermediate ſpaces of all crops of corn ſown in equidiſtant rows, and which ſhall earth up the young plants at the ſame time; the GOLD MEDAL, or TWENTY GUINEAS.

A HOE, with CERTIFICATES of its having been ſucceſsfully uſed, to be produced to the Society on or before the firſt Tueſday in December, 1796.

132. The ſame premium is extended one year further.

The HOE, with CERTIFICATES, to be produced on or before the firſt Tueſday in December, 1797.

133. DESTROYING THE GRUB OF THE COCKCHAFER. To the perſon who ſhall diſcover to the Society an effectual method, verified by repeated and ſatisfactory trials, of deſtroying the Grub of the Cockchafer, or of preventing or checking the deſtructive effects which always attend Corn, Peas, Beans, and Turneps, when attacked by thoſe inſects; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be produced on or before the firſt Tueſday in January, 1797.

134. DESTROYING THE WIRE-WORM. To the perſon who ſhall diſcover to the Society, an effectual method, verified by repeated and ſatisfactory trials, of deſtroying the inſect called the Wire-worm, or of preventing or checking the deſtructive effects which always attend Corn, Beans, Peas, or Pulſe, when attacked by thoſe inſects; the GOLD MEDAL, or THIRTY GUINEAS.

The

The ACCOUNTS, with proper CERTIFICATES, to be produced to the Society on or before the firſt Tueſday in January, 1797.

135. DESTROYING THE FLY ON HOPS, AND CATERPILLARS ON FRUIT-TREES AND CULINARY PLANTS. To the perſon who ſhall diſcover to the Society an eaſy and efficacious method of deſtroying the Fly on Hops, and Caterpillars on Fruit-trees and culinary Plants, ſuperior to any hitherto known or practiſed, the GOLD MEDAL or THIRTY GUINEAS.

ACCOUNTS and CERTIFICATES that the method has been effectually practiſed on not leſs than ſix acres of Hop-ground, or an Orchard or Garden of not leſs than two acres, to be delivered to the Society on or before the firſt Tueſday in February, 1797.

136. CURE OF THE ROT IN SHEEP. To the perſon who ſhall diſ-

cover to the Society the beſt and moſt effectual method of preventing or curing the diſeaſe called the Rot in Sheep, verified by repeated and ſatisfactory experiments, the GOLD MEDAL, or THIRTY GUINEAS.

It is expected that the Candidates furniſh accurate accounts of the nature, ſymptoms, and cure of the diſeaſe, together with the imputed cauſe thereof, and the actual or probable means of prevention, which, with proper CERTIFICATES, muſt be delivered to the Society on or before the firſt Tueſday in February, 1797.

137. PREVENTING AND CURING THE ILL EFFECTS OF THE FLY ON SHEEP. To the perſon who ſhall diſcover to the Society the moſt effectual method of preventing and curing the ill effects of the Fly on Sheep, the SILVER MEDAL, or THIRTY GUINEAS.

It is required that the method be aſcertained by repeated experiments, and that a

CERTIFICATE of its efficacy be delivered to the Society on or before the firſt Tueſday in December, 1796.

138. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in December, 1797.

139. PROTECTING SHEEP. To the perſon who, in the year 1797, ſhall protect the greateſt number of Sheep, not fewer than five hundred, in bad ſeaſons, by houſing them in hovels, or ſheds; and give the moſt ſatisfactory account, verified by experiment, of the advantages ariſing from the practice of defending Sheep from the inclemency of the weather, by ſuch hovels, or ſheds; TWENTY GUINEAS.

A particular account of the experiments made, with the advantages ariſing therefrom, together with the expence, and Certificates

of its utility, to be produced to the Society on or before the firſt Tueſday in March 1798.

N. B. It is at the option of the Candidates to have their hovels fixed, or moveable; and it is required, that the CERTIFICATES ſhall ſpecify the length of time the Sheep were under cover, and the manner in which they were maintained during that time; together with the general method of managing them in the ſaid hovels.

Premiums for Diſcoveries and Improvements in Chemiſtry, Dying, and Mineralogy.

140. BARILLA. For the greateſt quantity of Merchantable Barilla, not leſs than half a ton, made from Spaniſh Kali, or any other plant raiſed in great Britain, the GOLD MEDAL, or THIRTY GUINEAS.

A ſample of not leſs than twenty-eight pounds, with a CERTIFICATE that half a ton has been made, to be produced on or before the firſt Tueſday in January, 1797.

141. PRESERVING SEEDS OF VEGETABLES. For the beſt method of preſerving the ſeeds of Plants in a ſtate fit for vegetation a longer time than has hitherto been practiſed, ſuch method being ſuperior to any known to the public, and verified by ſufficient trial; to be communicated to the Society on or before the firſt Tueſ-

Tueſday in December, 1796; the GOLD MEDAL, or THIRTY GUINEAS.

142. The ſame premium is extended one year further; the ACCOUNTS to be produced on or before the firſt Tueſday in December, 1797.

143. METHOD OF SEPARATING THE SACCHARINE SUBSTANCE OF TREACLE IN A SOLID FORM. To the perſon who ſhall diſcover to the Society the beſt method of ſeparating the Saccharine Subſtance of Treacle in a ſolid form, at ſuch an expence as will render it advantageous to the public; the GOLD MEDAL, or FIFTY GUINEAS.

A quantity of the Saccharine Subſtance, ſo ſeparated, in a ſolid form, not leſs than thirty pounds weight, with an account of the proceſs, and CERTIFICATES that not leſs than one hundred weight has been prepared, to be produced to the Society on or before the firſt Tueſday in February, 1797.

144.

144. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in February, 1798.

145. PRESERVING FRESH-WATER SWEET. To the perſon who ſhall produce to the Society the beſt account, verified by ſatisfactory trials, of an efficacious method of preſerving Freſh-water ſweet during long voyages, the GOLD MEDAL, or FIFTY GUINEAS.

ACCOUNTS, and full deſcriptions of the methods made uſe of, in order that it may be known that nothing injurious enters therein, to be produced to the Society, with at leaſt thirty gallons of Water ſo preſerved, and proper CERTIFICATES, on or before the laſt Tueſday in December, 1796.

146. The ſame premium is extended one year further.

The

The ACCOUNTS and CERTIFICATES to be produced on or before the laſt Tueſday in December, 1797.

147. DESTROYING SMOKE. For the beſt account, aſcertained by proper experiments, of a method of deſtroying or burning the Smoke of fires belonging to Steam-Engines, Furnaces employed in calcining or ſmelting Metals, or other large works, in order to prevent annoyance to the neighbourhood; to be produced on or before the firſt Tueſday in January, 1797; the GOLD MEDAL, or THIRTY GUINEAS.

148. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the firſt Tueſday in January, 1798.

149. CONDENSING SMOKE. To the perſon who ſhall invent the beſt method by which the Smoke of Steam-Engines

gines, Brewhouſes, Sugar-houſes, or Furnaces, may be advantageouſly condenſed and collected in the form of Tar, or ſome other uſeful material; the GOLD MEDAL, or FIFTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES of the method having been ſucceſsfully employed, and ſpecimens of the materials produced, to be delivered to the Society on or before the firſt Tueſday in December, 1796.

150. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in December, 1797.

151. CANDLES FROM RESIN. To the perſon who ſhall diſcover to the Society the beſt method of ſo reducing the inflammable quality of Reſin, as to adapt it to the purpoſes of making Candles fit for common uſe, at a price much infe-

rior

rior to that of Candles made of Tallow only; the GOLD MEDAL, or THIRTY GUINEAS.

Six pounds at leaſt of the Candles ſo prepared, with an ACCOUNT of the proceſs, to be delivered to the Society on or before the firſt Tueſday in December, 1796.

152. REFINING WHALE OR SEAL OIL. For diſcloſing to the Society an effectual method of purifying Whale or Seal Oil from the glutinous matter that encruſts the wicks of lamps, and extinguiſhes the light, though fully ſupplied with oil; the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the whole of the proceſs be fully and fairly diſcloſed, in order that ſatisfactory experiments may be made by the Society, to determine the validity of the claim; and CERTIFICATES that not leſs than twenty gallons have been purified according to the proceſs delivered in, together with two gallons of the oil

in

in its unpurified ſtate, and, two gallons ſo refined, be produced to the Society on or before the ſecond Tueſday in February, 1797.

153. The ſame premium is extended one year further.

CERTIFICATES and SAMPLES to be produced on or before the ſecond Tueſday in February, 1798.

154. CLEARING FEATHERS FROM THEIR ANIMAL OIL. To the perſon who ſhall diſcover to the Society the beſt and moſt expeditious method, ſuperior to any hitherto practiſed, of clearing Gooſe-feathers from their offenſive Animal Oil, for the uſe of upholders in making beds, cuſhions, &c. the GOLD MEDAL, or FORTY GUINEAS.

A quantity of ſuch Feathers, unſtripped, and ſo cleared, not leſs than forty pounds weight, with a full account of the proceſs, to be produced to the Society on or before the firſt Tueſday in February, 1797.

155. SUBSTITUTE FOR, OR PREPARATION OF, YEAST. For diſcovering to the Society an effectual Subſtitute for Yeaſt, or preparation of Yeaſt, which, after being kept ſix months, ſhall be fit for fermenting liquors, and raiſing bread; the GOLD MEDAL, or THIRTY GUINEAS.

Specimens of the Subſtitute, or of the Preparation of Yeaſt, ſufficient for trials, together with a paper ſealed up, and containing an account of the compoſition of the Subſtitute, or method of preparing the Yeaſt, to be produced on or before the laſt Tueſday in November, 1796.

156. PROOF SPIRIT. To the Diſtiller who in the year 1796 ſhall make the greateſt quantity, not leſs than one hundred gallons, of a clean marketable Spirit, from articles not the food of man or cattle, equal in ſtrength or quality to the Proof Spirit now in uſe, and at a rate not higher than the ſpirit produced from corn or mo-

laſſes; the GOLD MEDAL, or FIFTY GUINEAS.

Ten gallons of the ſpirit, together with proper CERTIFICATES, and a full account of the expence and mode of making it, to be produced to the Society on or before the firſt Tueſday in January, 1797.

157. STARCH. To the Starch-maker who, in the year 1796, ſhall make the greateſt quantity, not leſs than two hundred weight of Starch, from materials not uſed as food for man; the GOLD MEDAL, or THIRTY GUINEAS.

Five pounds of the Starch ſo prepared, together with proper CERTIFICATES that the whole quantity is of the ſame quality, and with a full diſcloſure of the mode of making it, to be produced to the Society on or before the ſecond Tueſday in January, 1797.

158. PRESERVING SALTED PROVISIONS FROM BECOMING RANCID OR RUSTY. To the perſon who

ſhall diſcover to the Society the beſt, cheapeſt, and moſt efficacious method of preſerving Salted Proviſions from growing rancid or ruſty; the GOLD MEDAL, or THIRTY GUINEAS.

A full deſcription of the method, with proper CERTIFICATES that it has been found, on repeated trials, to anſwer the purpoſe intended, to be produced to the Society on or before the firſt Tueſday in February, 1797.

159. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in February, 1798.

160. INCREASING STEAM. To the perſon who ſhall diſcover to the Society a method, verified by actual experiments, of increaſing the quantity or the force of Steam, in Steam-Engines, with leſs fuel than is uſually employed, provided that in

general the whole amount of the expences in using Steam-Engines may be considerably leſſened; the GOLD MEDAL, or THIRTY GUINEAS.

To be communicated to the Society on or before the firſt Tueſday in January, 1797.

N. B. As it is well known there are methods of preventing the ebullition of liquids by the addition of particular matters in the boiling, it is ſubmitted to the conſideration of the ingenious, whether, by the addition of ſome matters, or by ſome mechanical operations, the boiling and evaporation may not be increaſed.

161. PREVENTING THE DRY-ROT IN TIMBER. To the perſon who ſhall diſcover to the Society the cauſe of the Dry-Rot in Timber, and diſcloſe a certain method of prevention, ſuperior to any hitherto known; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS of the cauſe, and method of prevention, confirmed by repeated experiments, to be produced to the Society on or before the ſecond Tueſday in December, 1796.

162. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1797.

163. FINE BAR-IRON. To the perſon, in England or Wales, who ſhall make the greateſt quantity of Bar-Iron, not leſs than ten tons, with Coak, from Coak Pigs, equal in quality to the beſt Iron imported from Sweden or Ruſſia, and as fit for converting into Steel; the GOLD MEDAL.

SAMPLES, not leſs than one hundred weight, with CERTIFICATES that the whole quantity is of equal quality, to be produced to the Society on or before the firſt Tueſday in January, 1797.

164.

164. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be delivered on or before the firſt Tueſday in January, 1798.

165. METHOD OF PREPARING WHITE LEAD, WHICH SHALL NOT BE PREJUDICIAL. To the perſon who ſhall diſcover to the Society a method of preparing White Lead, in a manner that ſhall not be prejudicial to the health of the workmen employed either in making or uſing it, and will anſwer all the purpoſes for which White Lead is at preſent uſed; the GOLD MEDAL, or FIFTY GUINEAS.

A quantity of the White Lead ſo prepared, with an account of the proceſs made uſe of, and CERTIFICATES that not leſs than one ton has been manufactured in the ſame manner, to be produced to the Society on or before the ſecond Tueſday in February, 1797.

166. SUBSTITUTE FOR THE BASIS OF PAINT. To the perſon who ſhall produce to the Society the beſt Subſtitute, ſuperior to any hitherto known, for the Baſis of Paint, equally proper for the purpoſe as the White Lead now employed; ſuch ſubſtitute not to be of a noxious quality, and which may be afforded at a price not materially higher than that of White Lead; the GOLD MEDAL, or THIRTY GUINEAS.

A quantity of the Subſtitute, not leſs than fifty pounds weight, with an ACCOUNT of the proceſs uſed in preparing it, and CERTIFICATES that at leaſt one hundred weight has been manufactured, to be produced to the Society on or before the ſecond Tueſday in November, 1796.

167. The ſame premium is extended one year further.

CERTIFICATES and ACCOUNTS to be produced on or before the ſecond Tueſday in November, 1797.

168.

168. REFINING BLOCK TIN. To the perſon who ſhall diſcover to the Society the beſt method of purifying or refining *Block Tin*, in ſuch manner as to render it fit for the finer purpoſes to which *Grain Tin* is now ſolely applied, and at an expence that ſhall not render it higher in price than *Grain Tin*; the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES that not leſs than three tons have been refined or purified, with a full detail of the proceſs, and a quantity, not leſs than one hundred weight, of the Tin ſo refined, to be produced to the Society on or before the firſt Tueſday in November, 1796.

169. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1797.

170. GLAZING EARTHEN WARE WITHOUT LEAD. To the

perſon who ſhall diſcover to the Society the cheapeſt, ſafeſt, moſt durable, and moſt eaſily fuſible Compoſition, fit for the purpoſe of glazing the ordinary kinds of Earthen Ware, without any preparation of Lead, and preferable to any hitherto in uſe; the GOLD MEDAL, or THIRTY GUINEAS.

SPECIMENS of the Ware ſo glazed, with proper CERTIFICATES of its having ſucceeded, and a SAMPLE of the materials made uſe of, to be produced to the Society on or before the firſt Tueſday in February, 1797.

171. PURIFYING BRACKISH WATER. To the perſon who ſhall diſcover to the Society the beſt and cheapeſt method, verified by actual experiment, of Purifying or Reducing Brackiſh Water, which frequently ariſes from New Wells, made in particular places, to a natural ſweetneſs, fit for the uſe of families and for the purpoſe of cattle; the SILVER MEDAL, and FIFTEEN GUINEAS.

Satisfactory CERTIFICATES that ſuch Brackiſh Water has been rendered perfectly ſweet, and uſed by the family to which ſuch Well may belong at leaſt three months afterwards, with an account of the method made uſe of in purifying the ſame, to be delivered to the Society on or before the ſecond Tueſday in February, 1797.

172. BLACK DYE ON COTTON. To the perſon who ſhall invent and produce to the Society a Black Dye on Cotton Yarn, ſuperior to any hitherto known or in uſe; the GOLD MEDAL, or THIRTY GUINEAS.

A full ACCOUNT of the proceſs, with CERTIFICATES that the cotton thus dyed ſtands waſhing with ſoap, and a SAMPLE of the yarn ſo dyed, not leſs than five pounds weight, to be produced to the Society on or before the firſt Tueſday in February, 1797.

173. PRESERVING IRON FROM RUST. To the perſon who ſhall invent and diſcover to the Society, a cheap compoſition

poſition, which ſhall effectually preſerve wrought iron from ruſt; the GOLD MEDAL, or FIFTY GUINEAS.

A full deſcription of the method of preparing the compoſition, with CERTIFICATES that it has ſtood at leaſt two years unimpaired, and expoſed to the atmoſphere during the whole time, to be produced to the Society, with ten pounds weight of the compoſition, on or before the firſt Tueſday in January, 1799.

174. The ſame premium is extended one year further. The deſcription and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in January, 1800.

Premiums for promoting the Polite Arts.

175. HONORARY PREMIUMS FOR DRAWINGS. For the beſt Drawing of any kind, made with Water-Colours, Crayons, Chalk, Black Lead, Pen, Indian Ink, or Biſter, by young Gentlemen under the age of twenty-one, ſons or grandſons of Peers or Peereſſes in their own right, of Great Britain or Ireland, to be produced on or before the firſt Tueſday in March, 1797; the HONORARY MEDAL of the Society IN GOLD.

176. The ſame IN SILVER for the next in merit.

177, 178. The ſame premiums will be given, on the like conditions, to young Ladies, daughters or grand-daughters of Peers, or Peereſſes in their own right, of Great-Britain or Ireland.

179.

179. HONORARY PREMIUMS FOR DRAWINGS. For the beſt Drawing of any kind, made with Water-colours, Crayons, Chalk, Black Lead, Pen, Indian Ink, or Biſter, by young Gentlemen under the age of twenty-one; to be produced on or before the firſt Tueſday in March, 1797; the GOLD MEDAL.

180. For the next in merit, the SILVER MEDAL.

181, 182. The ſame premiums will be given for Drawings by young Ladies.

N. B. As the foregoing Honorary Premiums are intended only for ſuch of the Nobility and Gentry as may hereafter become patrons or patroneſſes of the Arts; perſons profeſſing any branch of the Polite Arts, or any buſineſs dependent on the Arts of Deſign, or the ſons or daughters of ſuch perſons, will not be admitted Candidates in theſe Claſſes.

The following Premium (Claſs 183) is offered in conformity to the Will of the late John Stock, of Hampſtead, Eſq.

183. DRAWING. For the beſt Drawing in perſpective of the Water-gate at York-buildings, not leſs than eighteen inches high, to be produced on or before the third Tueſday in February, 1797, a SILVER MEDALLION, with the following engraved inſcription: *The Premium given by the Society for the Encouragement of Arts, Manufactures, and Commerce, in conformity to the Will of John Stock, of Hampſtead, Eſq.* The Drawing to be left with the Society as their property.

184. DRAWINGS OF OUTLINES. For the beſt Outline, after an original group or caſt, in plaſter, of Human Figures, by perſons of either ſex, under the age of ſixteen, the principal figure not leſs than twelve inches; to be produced on or before the third Tueſday in February, 1797; the greater SILVER PALLET.

185.

185. For the next in merit, the leſſer SILVER PALLET.

N. B. Theſe drawings are to be made on Paper, with Chalk, Black Lead, Indian Ink, or Biſter; and the original either to be produced to the Society, or to be referred to for their examination.

186. DRAWINGS OF LANDSCAPES. For the beſt Drawing of a Landſcape after nature, by perſons of either ſex under twenty-one years of age, to be produced on or before the third Tueſday in February, 1797, the greater SILVER PALLET.

187. For the next in merit, the leſſer SILVER PALLET.

Each Candidate muſt mention on the front of the Drawing, from whence the View was taken; and the Drawings muſt be made with Chalk, Pen, Indian Ink, Water-Colours, or Biſter.

188. HISTORICAL DRAWINGS. For the beſt Hiſtorical Drawing, being an original

original compoſition, of five or more Human Figures; the height of the principal figure not leſs than eight inches; to be made with Crayons, Chalk, Black Lead, Pen, Indian Ink, Water-colours, or Biſter, and to be produced on or before the third Tueſday in February, 1797; the GOLD PALLET.

189. For the next in merit, the greater SILVER PALLET.

190. SURVEYS OF COUNTIES. To the perſon who, in the year 1796, ſhall complete and publiſh an accurate Survey of any one County in England or Wales, on a ſcale of not leſs than one inch to a mile, for which rewards have not already been given by the Society; the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES of the accuracy of the Survey, and that it was begun after the firſt of June, 1792, together with the Map, to be produced on or before the laſt Tueſday in January, 1797.

The

The Map to which the premium ſhall be adjudged, to remain the property of the Society.

N. B. The Society are already in poſſeſſion of Surveys of the following Counties, viz. Bedford, Cornwall, Devonſhire, Derbyſhire, Cheſhire, Durham, Somerſetſhire, Northumberland, Suffolk, Leiceſterſhire, Cumberland, Lancaſhire, Dorſetſhire, Hampſhire, Glouceſterſhire, Herefordſhire, Hertfordſhire, Huntingdonſhire, Northamptonſhire, Nottinghamſhire, Surrey, Suſſex, Weſtmorland, and Worceſterſhire.

191. The ſame premium is extended one year further.

The Survey to be begun after the firſt of June, 1793; and the Map to be produced on or before the laſt Tueſday in January, 1798.

192. The ſame premium is extended one year further.

The

The Survey to be begun after the firſt of June, 1794; and the Map to be produced on or before the laſt Tueſday in January, 1799.

193. The ſame premium is extended one year further.

The Survey to be begun after the firſt of June, 1795; and the Map to be produced on or before the laſt Tueſday in January, 1800.

194. NATURAL HISTORY. To the Author who ſhall publiſh, in the year 1796, the Natural Hiſtory of any County of England or Wales; the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the ſeveral natural productions, whether animal, vegetable, or mineral, peculiar to the county, or found therein, be carefully and ſpecifically arranged and deſcribed, in order that the Public may be enabled to judge what Arts or Manufactures are moſt likely to ſucceed in ſuch County.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1797.

195. The ſame premium is extended one year further.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1798.

196. The ſame premium is extended one year further.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1799.

CONDITIONS.

No perſon who has gained the firſt premium in any Claſs, will be admitted a Candidate in a Claſs of an inferior age; and no Candidate ſhall receive more than one Premium in one year; nor will they who for two ſucceſſive years ſhall gain the firſt Premium in one Claſs, be ever again admitted as Candidates in that Claſs.

No

No perſon ſhall ever be admitted a Candidate in any Claſs, in which he has three times obtained the whole of the firſt Premium.

No Candidate ſhall ſend in more than one Performance in any one Claſs.

All the Claims which are produced each Seſſion before the Committee of Polite Arts, (to which Premiums or Bounties are adjudged) are to remain with the Society till after the public diſtribution of rewards in May.

No Claim for a Premium in the Polite Arts will be admitted, that has obtained, or has been produced in order to obtain, a Premium, Reward, or Gratification, from any other Society, or any Academy or School.

All Performances that obtain Premiums in the Polite Arts, muſt be begun after the publication of ſuch Premiums.

Purpoſely to encourage real merit, and to prevent any attempts to impoſe on the Society, by producing Drawings which ſhall have been made or retouched by any

other perſon than the Candidate, the Society is reſolved, upon all occaſions, with reſpect to the ſucceſsful Candidates in Claſſes 183 to 188 incluſive, to prove their abilities, by requiring a ſpecimen made under the inſpection of the Committee of Polite Arts, in every inſtance where ſuch proof can be obtained.

It is required that all Candidates in the Polite Arts, do ſignify, on their Drawings, their age; and whether the performances are originals, or copies; and, if copies, whence they were taken.

Premiums

Premiums for encouraging and improving Manufactures.

197. SILK. For the greateſt quantity of merchantable Silk, not leſs than ten pounds weight, produced by worms bred in England in the year 1796, the property of any one perſon; the GOLD MEDAL.

198. For the ſecond greateſt quantity, not leſs than five pounds weight, the SILVER MEDAL.

SPECIMENS of the SILK, not leſs than one pound, with CERTIFICATES that the whole is of equal quality, and produced in England, to be delivered to the Society on or before the firſt Tueſday in January, 1797.

199. MACHINE FOR CARDING SILK. For the beſt Machine, ſuperior to any now in uſe, for carding Waſte Silk equally well as by hand; to be produced, together with a ſpecimen of the Cardings,

on or before the firſt Tueſday in November, 1796; the GOLD MEDAL, or THIRTY GUINEAS.

200. CLOTH FROM HOP-STALKS OR BINES. To the perſon who ſhall produce to the Society the greateſt quantity, not leſs than thirty yards, of Cloth, at leaſt twenty-ſeven inches wide, made in England or Wales, of Hop-Stalks or Bines, and ſuperior to any hitherto manufactured in England of that material, the GOLD MEDAL, or THIRTY GUINEAS.

One pound of the Thread of which the Cloth is made, and thirty yards of the Cloth, together with proper CERTIFICATES that the whole is manufactured from Hop-Stalks or Bines, to be produced to the Society on or before the firſt Tueſday in December, 1796.

N. B. The Society are already in poſſeſſion of Cloth made in England from Hop-Stalks or Bines, which may be inſpected by application to the Regiſter.

201.

201. WICKS FOR CANDLES OR LAMPS. To the perſon who ſhall diſcover to the Society a method of manufacturing Hop-Stalks or Bines, or any other cheap material, the growth of England or Wales, ſo as to render them fit for the purpoſe of ſupplying the place of Cotton, for Wicks of Candles or Lamps, TWENTY GUINEAS.

SAMPLES, not leſs than five pounds weight, of the Wicks, ſo prepared, to be produced to the Society, with CERTIFICATES that the whole quantity is equal in quality to the Sample produced, on or before the ſecond Tueſday in January, 1797.

202. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced on or before the ſecond Tueſday in January, 1798.

203. PAPER FROM RAW VEGETABLE SUBSTANCES. To the per-

ſon in England or Wales who ſhall make the greateſt quantity, not leſs than ten reams, of the beſt and moſt uſeful Paper, from Raw Vegetable Subſtances, TWENTY GUINEAS.

CERTIFICATES of the making ſuch Paper, and one ream of the Paper, to be produced on or before the firſt Tueſday in November, 1796.

N. B. The Society are in poſſeſſion of two volumes, containing a great variety of ſpecimens of Paper made from Raw Vegetables, viz. Thiſtles, Potatoe-Haum, Poplar, Hop-bines, &c. which volumes may be inſpected by any perſon, on application to the Regiſter.

204. MAINTAINING AND EMPLOYING THE POOR. To the perſon who ſhall produce to the Society, the beſt practical and moſt œconomical Plan for the maintenance and employment of the Poor in Pariſh Workhouſes, ſuperior to any hitherto

hitherto generally known, the GOLD MEDAL, or FIFTY GUINEAS.

The Plans to be delivered to the Society on or before the firſt Tueſday in March, 1797.

Premiums

Premiums for Inventions in Mechanicks.

205. TRANSIT INSTRUMENT. To the perſon who ſhall invent and produce to the Society a cheap and portable Tranſit Inſtrument, which may eaſily be converted into a Zenith Sector, capable of being accurately and expeditiouſly adjuſted for the purpoſe of finding the Latitudes and Longitudes of places, and ſuperior to any portable Tranſit Inſtrument now in uſe, the GOLD MEDAL, or FORTY GUINEAS.

To be produced on or before the laſt Tueſday in January, 1797.

206. TAKING WHALES BY THE GUN-HARPOON. To the perſon who, in the year 1796, ſhall ſtrike the greateſt number of Whales, not fewer than three, with the Gun-Harpoon, TEN GUINEAS.

Proper CERTIFICATES of the ſtriking ſuch Whales, and that they were actually taken in the year 1796, ſigned by the Maſter,

or

or by the Mate when the Claim is made by the Maſter, to be produced to the Society on or before the laſt Tueſday in December, 1796.

207. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1797.

208. DRIVING BOLTS INTO SHIPS. To the perſon who ſhall invent and produce to the Society a Model, ſhewing a method of driving Bolts into Ships, particularly thoſe of Copper, without ſplitting the head or bending them, with more diſpatch, in all directions, and tighter than by any means hitherto known or in uſe, the GOLD MEDAL, or FORTY GUINEAS.

The Model, with CERTIFICATES that a Machine on the ſame conſtruction has been uſed to advantage, to be produced to the

the Society on or before the firſt Tueſday in February, 1797.

209. PORTABLE MACHINE FOR LOADING AND UNLOADING GOODS. To the perſon who ſhall produce an Invention to the Society, of the beſt, moſt ſimple, and portable Machine, ſuperior to any hitherto known, or in uſe, for the purpoſe of loading and unloading goods; the GOLD MEDAL, or FORTY GUINEAS.

The Machine itſelf, or a Model of it, to be delivered to the Society on or before the firſt Tueſday in January, 1797.

210. PARISH, OR FAMILY MILL. To the perſon who ſhall invent and produce to the Society, the beſt conſtructed Mill for grinding corn for the uſe of private families, or pariſh poor; the conſtruction to be ſuch as to render the working of the Mill eaſy and expeditious, and ſuperior to any hitherto in uſe; the GOLD MEDAL, or FORTY GUINEAS.

The

The Mill, and CERTIFICATES of its having been uſed to good effect, to be produced to the Society on or before the firſt Tueſday in February, 1797.

N. B. Cheapneſs and Simplicity will be conſidered as eſſential parts of its merit.

211. MACHINE FOR RAISING COALS, ORE, &c. &c. To the perſon who ſhall invent a Machine for raiſing Coals, Ore, &c. from Mines, which ſhall produce the effect at a leſs expence than thoſe already known or in uſe; the GOLD MEDAL, or FIFTY GUINEAS.

A Model of the Machine, made on a ſcale of not leſs than one inch to a foot, to be produced to the Society on or before the ſecond Tueſday in February, 1797.

212. MACHINE FOR RAISING WATER. To the perſon who ſhall invent a Machine on a better, cheaper, and more ſimple conſtruction than any hitherto known or in uſe, for raiſing Water out of

Wells, &c. from a depth not leſs than fifty feet, the GOLD MEDAL, or FORTY GUINEAS.

CERTIFICATES of the performance of the Machine, and a Model of it, on a ſcale of not leſs than one inch to a foot, to be produced to the Society on or before the firſt Tueſday in February, 1797.

213. MACHINE FOR RAISING WATER TO FLOAT PASTURE LAND. To the perſon who ſhall produce to the Society a model of the beſt conſtructed Machine, for raiſing Water from a ſtream, for the purpoſe of floating Paſture Land; the GOLD MEDAL, or FORTY GUINEAS.

The Model to be produced to the Society on or before the third Tueſday in February, 1797, with CERTIFICATES that a Machine on the ſame conſtruction, has been uſefully employed for the above purpoſes.

The more ſimple the conſtruction, and the leſs trouble and attendance the Machine

requires, the greater merit will it be conſidered to poſſeſs.

214. PREVENTING WATER FREEZING IN PIPES. To the perſon who ſhall invent and diſcover to the Society a cheap and effectual Method, ſuperior to any hitherto in uſe, for preventing the Water freezing in Pipes, ſerving to ſupply dwelling-houſes or other buildings, the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES of its having been tried with ſucceſs, to be delivered to the Society on or before the firſt Tueſday in March, 1797.

215. IMPROVEMENT OF WHEEL-CARRIAGES. To the perſon who ſhall diſcover to the Society the principles, and point out the conſtruction, upon which Wheel-carriages may be drawn with the leaſt fatigue to the horſe or horſes employed, the GOLD MEDAL, or FIFTY GUINEAS.

The

The CLAIMS to be delivered to the Society on or before the ſecond Tueſday in December, 1796.

216. PREVENTING HORSES TURNING ABOUT IN DRAWING WATER, &c. To the perſon who ſhall invent and produce to the Society a Model, on a ſcale of not leſs than one inch to the foot, ſhewing an eaſy, ſafe, and expeditious method to obviate the neceſſity of the horſes employed in raiſing Water out of deep Wells, drawing Ore from Mines, or Coals from Pits, turning about at the time the Water, Ore, or Coal is delivered; the GOLD MEDAL, or FORTY GUINEAS.

The Model to be produced to the Society, with CERTIFICATES of a Machine on the ſame conſtruction having been uſefully employed, on or before the firſt Tueſday in February, 1797.

217. BORING ROCKS IN ORDER TO BLAST THEM. To the perſon who

who ſhall diſcover to the Society, a more cheap, ſimple, and expeditious Method than any hitherto known or in uſe, of Boring Rocks in Mines, Shafts, Wells, &c. for the purpoſe of Blaſting them with Gunpowder, the GOLD MEDAL, or FORTY GUINEAS.

CERTIFICATES of the method having been practiſed with ſucceſs, with a full deſcription thereof, to be delivered to the Society on or before the firſt Tueſday in January, 1797.

218. *As the preſent method of cleanſing Chimneys is attended with great hardſhips, and ſometimes with fatal accidents to the children employed, and as the quantity of ſoot accumulated in Chimneys is frequently the occaſion of Fires, the Society propoſe to give the following Premium.*

CLEANSING CHIMNEYS. To the perſon who ſhall invent and produce to the Society, the moſt ſimple, cheap, and proper

Apparatus, ſuperior to any hitherto known or in uſe, for cleanſing Chimneys from Soot, and obviating the neceſſity of children being employed within the flues, in the manner now practiſed; the GOLD MEDAL, or FORTY GUINEAS.

The Apparatus, with CERTIFICATES of its having been uſed with proper effect, to be produced to the Society on or before the third Tueſday in February, 1797.

Premiums offered for the Advantage of the Britiſh Colonies.

219. NUTMEGS. For the greateſt quantity of merchantable Nutmegs, not leſs than ten pounds weight, being the growth of his Majeſty's dominions in the Weſt Indies, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal to thoſe imported from the Iſlands of the Eaſt Indies, the GOLD MEDAL, or ONE HUNDRED GUINEAS.

Satisfactory CERTIFICATES, from the Governor, or Commander in Chief, of the place of growth, with an account of the number of trees, their age, nearly the quantity of fruit on each tree, and the manner of culture, to be produced on or before the firſt Tueſday in December, 1796.

220. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in December, 1797.

221. CINNAMON. For importing into the port of London, in the year 1796, the greateſt quantity, not leſs than twenty pounds weight, of Cinnamon, being the growth of ſome of the Iſlands in the Weſt-Indies belonging to the Crown of Great-Britain, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal in goodneſs to the Cinnamon brought from the Eaſt-Indies, the GOLD MEDAL, or FIFTY GUINEAS.

SAMPLES, not leſs than two pounds weight, with CERTIFICATES that the whole quantity is equal in goodneſs; together with ſatisfactory CERTIFICATES, ſigned by the Governor, or Commander in Chief, of the place of growth, with an account of the number of trees growing on the ſpot, their age, and the manner of culture; to be produced to the Society, on

or before the firſt Tueſday in January, 1797.

222. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

223. CLOVES. For importing into the port of London, in the year 1797, the greateſt quantity of Cloves, not leſs than twenty pounds weight, being of the growth of ſome of the Iſlands in the Weſt-Indies, ſubject to the Crown of Great-Britain, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal in goodneſs to the Cloves brought from the Eaſt-Indies; the GOLD MEDAL, or FIFTY GUINEAS.

SAMPLES, not leſs than two pounds weight, with CERTIFICATES that the whole quantity is equal in goodneſs, together with ſatisfactory CERTIFICATES, ſigned

by the Governor, or Commander in Chief of the place of growth, with an account of the number of trees growing on the ſpot, their age, and the manner of culture, to be produced to the Society on or before the firſt Tueſday in January, 1798.

224. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1799.

225. PLANTATIONS OF BREAD-FRUIT TREE. To the perſon who ſhall have raiſed in any of the Iſlands of the Weſt-Indies ſubject to the Crown of Great Britain, or in any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, between the firſt of January, 1795, and the firſt of January, 1796, the greateſt number of Bread-fruit Trees, not fewer than one hundred, and properly fenced and ſecured the ſame, in order to ſupply

ſupply the Fruit to the Inhabitants, the GOLD MEDAL, or THIRTY GUINEAS.

Proper ACCOUNTS and CERTIFICATES, ſigned by the Governor or Commander in Chief, of the methods made uſe of in cultivating the Plants and ſecuring the Plantation, and that the Trees are in a growing and thriving ſtate at the time of ſigning ſuch Certificates, to be produced to the Society on or before the firſt Tueſday in January, 1797.

226. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

227. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1799.

228. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1800.

229. KALI FOR BARILLA. To the perſon who ſhall have cultivated, in the Bahama Iſlands, or any other part of his Majeſty's dominions in the Weſt Indies, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, in the year 1793, the greateſt quantity of land, not leſs than two acres, with Spaniſh Kali, fit for the purpoſe of making Barilla, the GOLD MEDAL, or THIRTY GUINEAS.

230. For the next greateſt quantity, not leſs than one acre, the SILVER MEDAL, or FIFTEEN GUINEAS.

CERTIFICATES, ſigned by the Governor, or Commander in Chief for the time being, of the quantity of land ſo cultivated, and of the ſtate of the Plants at the time of

of ſigning ſuch Certificates, to be delivered to the Society on or before the ſecond Tueſday in November, 1796.

231, 232. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1797.

233, 234. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1798.

235. DISCOVERY OF A PASSAGE BY LAND FROM UPPER CANADA TO THE SOUTH SEA. To the perſon who ſhall firſt diſcover a Paſſage by Land, from the north-weſt parts of Upper Canada to the South Sea, between Nootka Sound and the Straits of Kamſchatka, or to the navigable part of any River that diſembogues

embogues itſelf into the South Sea within thoſe limits; the GOLD MEDAL.

Such diſcovery to be aſcertained by a CERTIFICATE under the hand and ſeal of the Governor, or Commander in Chief for the time being, of the ſaid province of Upper Canada.

236. DESTROYING THE INSECT COMMONLY CALLED THE BORER. To the perſon who ſhall diſcover to the Society an effectual method of deſtroying the Inſect commonly called the BORER, which has of late years been ſo deſtructive to the Sugar-Canes in the Weſt-India Iſlands, or in any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, the GOLD MEDAL, or FIFTY GUINEAS.

The Diſcovery to be aſcertained by ſatisfactory CERTIFICATES, under the hand or ſeal of the Governor or Commander in Chief for the time being, and of ſome other reſpectable perſons, inhabitants of the Iſlands

Iſlands, or other place, in which the remedy has been ſucceſsfully applied; ſuch CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in January, 1797.

237. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in January, 1798.

238. BOTANIC GARDEN IN THE BAHAMA ISLANDS. To the perſon who, before the firſt of January, 1795, ſhall have ſet apart, and properly fenced and cultivated, the greateſt quantity of ground, not leſs than five acres, in any of the Bahama Iſlands, as a Botanic Garden, for the purpoſe of making experiments in the culture of thoſe articles which are the peculiar production of the tropical climates, and which may tend to promote the commerce and manufactures of this country; the GOLD MEDAL, or ONE HUNDRED GUINEAS.

It is required that any perſon claiming the foregoing premium, ſhould produce to the Society, on or before the firſt Tueſday in January, 1797, a CERTIFICATE from the Governor or Commander in Chief of the Bahama Iſlands for the time being, of his having complied with the above requiſitions, and that the Garden is in a proper ſtate of culture at the time of ſigning ſuch Certificate.

239. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1798.

240. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1799.

Society's

Society's Office, Adelphi, June 1, 1796.

Ordered,

THAT THE SEVERAL CANDIDATES AND CLAIMANTS TO WHOM THE SOCIETY SHALL ADJUDGE PREMIUMS OR BOUNTIES, DO ATTEND AT THE SOCIETY'S OFFICE IN THE ADELPHI, ON THE LAST TUESDAY IN MAY, 1797, AT TWELVE O'CLOCK AT NOON, TO RECEIVE THE SAME; THAT DAY BEING APPOINTED BY THE SOCIETY FOR THE DISTRIBUTION OF THEIR REWARDS: AND BEFORE THAT TIME NO PREMIUM OR BOUNTY WILL BE DELIVERED, EXCEPTING TO THOSE WHO ARE OUT OF THE KINGDOM, OR PREVENTED BY UNAVOIDABLE ACCIDENTS.

IN CASES WHERE THE SOCIETY MAY THINK FIT TO ADMIT EXCUSES FOR NOT ATTENDING IN PERSON, DEPUTIES MAY BE SUBSTITUTED TO RECEIVE THE REWARDS, PROVIDED SUCH DEPUTIES ARE EITHER MEMBERS OF THE SOCIETY, OR THE SUPERIOR OFFICERS THEREOF.

GENERAL

GENERAL CONDITIONS.

NOTWITHSTANDING the Society reſerve to themſelves the power of giving, in all caſes, ſuch part only of any Premium as the Performance ſhall be adjudged to deſerve, or of withholding the whole, if there be no merit; yet the Candidates may be aſſured the Society will always judge liberally of their ſeveral claims.

It is required that the matters for which Premiums are offered, be delivered in without names, or any intimation to whom they belong; that each particular thing be marked in what manner each Claimant thinks fit, ſuch Claimant ſending with it a paper ſealed up, having on the outſide a correſponding mark, and on the inſide the Claimant's name and addreſs: and all Candidates are to take notice, that no claim for a Premium will be attended to, unleſs the conditions of the Advertiſement are fully complied with.

No

No Papers ſhall be opened, but ſuch as ſhall gain Premiums, unleſs where it appears to the Society abſolutely neceſſary for the determination of the Claim; all the reſt ſhall be returned unopened, with the Matters to which they belong, if inquired after by the Mark, within two years; after which time, if not demanded, they ſhall be publicly burnt, unopened, at ſome meeting of the Society.

All Models of Machines, which obtain Premiums or Bounties, ſhall be the property of the Society.

All the Premiums of this Society are deſigned for Great Britain, unleſs expreſsly mentioned to the contrary.

The Claims ſhall be determined as ſoon as poſſible after the delivery of the ſpecimens.

No perſon ſhall receive any Premium Bounty, or Encouragement, from the Society, for any matter for which he has obtained, or propoſes to obtain, a patent.

A Candidate for a Premium, or a perſon applying for a bounty, being detected in any

any diſingenuous method to impoſe on the Society, ſhall forfeit ſuch Premium or Bounty, and be deemed incapable of obtaining any for the future.

The Performances which each year obtain Premiums or Bounties, are to remain with the Society until after the public diſtribution of Rewards.

No member of this Society ſhall be a Candidate for, or entitled to receive, any Premium, Bounty, or Reward whatſoever, except the Honorary Medal of the Society.

Where Certificates are required to be produced in claim of Premiums, they ſhould be expreſſed, as nearly as poſſible, in the words of the reſpective advertiſements, and ſhould not be from the Candidate (ſolely), but from ſome other perſon or perſons who have a poſitive knowledge of the facts certified.

Where Premiums or Bounties are obtained in conſequence of ſpecimens produced, the Society mean to retain ſuch parts of thoſe ſpecimens as they may judge neceſſary,

ceſſary, making a reaſonable allowance for the ſame.

No candidates ſhall be preſent at any meetings of the Society or Committees, or admitted at the Society's Rooms, after they have delivered in their Claims, until ſuch Claims are adjudged, unleſs ſummoned by the Committee.

N. B. Any information or advice that may forward the deſigns of this Society for the public good, will be received thankfully, and duly conſidered, if communicated by letter, addreſſed to the Society, and directed to Mr. MORE, the Secretary, at the Society's Office, in the Adelphi Buildings, London.

*** In caſe any perſon ſhould be inclined to leave a ſum of money to this Society, by will, the following form is offered for that purpoſe:

Item. I give and bequeath unto A. B. and C. D. the ſum of upon condition and to the intent that they, or one of them, do pay the ſame to the Collector for the time being, of a Society in London, who now call themſelves the Society for the Encouragement of Arts, Manufactures, and Commerce; which ſaid ſum of I will and deſire may be paid out of my perſonal eſtate, and applied towards the carrying on the laudable deſigns of the Society.

By order of the Society,

SAMUEL MORE, Secretary.

PAPERS

IN

AGRICULTURE.

AGRICULTURE.

IN conſequence of the following Account and Certificates having been received, the GOLD MEDAL, being the Premium offered for ſowing ACORNS, for the purpoſe of raiſing OAKS for TIMBER, was this Seſſion adjudged to JAMES DENTON, Eſq.

SIR,

BEING deſirous to obtain the honorary Premium offered by the Society for the Encouragement of Arts, Manufactures, and Commerce, for the Improvement of Planting, I have encloſed a Certificate, which I beg to have the honour to lay before them for their approbation.

I am, SIR,
Your moſt obedient humble Servant,
JAMES DENTON.

Brandon,
October 30, 1795.

Mr. MORE.

THIS is to certify, that James Denton, of Brandon, in the Counties of Norfolk and Suffolk, Eſq. planted ten acres three roods of land with Acorns, on his eſtate at Feltwell, in Norfolk, part broad-caſt, and the other drilled, two buſhels on each acre, in the months of October, November, and December, 1794; and that there are now more than three hundred young Oaks on each acre. In the ſame months planted the ſame ground with more than one thouſand ſeven hundred larch and ſpruce firs and beech-trees on each acre; alſo planted twenty-ſeven acres one rood of land with Acorns, not leſs than one thouſand five hundred Acorns on each acre, which were dibbled into a plantation of larch, ſpruce firs, and other trees, planted in the years 1791, 1792, and 1793.—There are now growing upwards of one thouſand five hundred larch, ſpruce firs, and beech-trees, on each acre; and that, upon a view taken by us three days previous to the date hereof, the plants were in a thriving ſtate and good condition, and well fenced in every part.

Witneſs our hands, the thirtieth day of October, 1795.

HENRY PRITCHARD, Rector of Feltwell.

THOMAS AYLMER, Churchwarden of Feltwell.

SAMUEL ELLINGTON, Gardener, who ſet the above.

WILLIAM WEBB, Land-Surveyor, who ſurveyed the above land.

GENTLEMEN,

I HEREBY acknowledge my ſignature to a Certificate, purporting that James Denton, Eſq. in the pariſh of Feltwell, did plant ten acres three rood of land, and alſo twenty-ſeven acres and one rood, with Acorns, in the months of October, November, and December, in the year 1794, and which are now in a very flouriſhing ſtate.

I am happy, Gentlemen, to bear witneſs a ſecond time to ſo expanded an act, which has not only rendered a large tract of here-

tofore-barren ſoil, an object of great future utility, but of ſingular beauty to the ſurrounding country.

I have the honour to be,

GENTLEMEN,

Your very humble ſervant,

HENRY PRITCHARD,
Rector of Feltwell, in the County of Norfolk.

The

The GOLD MEDAL, being the firſt Premium offered for raiſing OAKS, was this Seſſion adjudged to the Rev. JOHN ROBERT LLOYD, of Aſton, near Oſweſtry, Salop, from whom the following Account and Certificates were received.

SIR,

I TAKE the liberty of requeſting you to acquaint the Society for Encouragement of Arts, Manufactures, and Commerce, that I laſt ſeaſon made a plantation of Oaks in a field well fenced, and ſecured from treſpaſs, which are now in a healthy ſtate, and likely to grow faſt.

The whole number was ſixty thouſand and twenty, of four-year-old plants, which had been raiſed in my nurſery, fifty-eight thouſand four hundred of which were planted between the 24th of November, 1793, and the nineteenth day of the following month; and in the ſpring 1794, befor the 22d day of March, the remaining one thouſand ſix hundred and twenty were planted: the ground

ground had been fallowed and well manured for wheat, and after the harveſt 1793, the holes were immediately made for the Oaks: when the plantation was nearly completed, nine thouſand three hundred two-years-old Scotch firs were likewiſe put into the ground, under the ſuppoſition of their becoming a ſhelter to the Oaks, and to be cut away upon the firſt thinning; and I muſt alſo mention, that the field I ſelected is of a nature particularly ſuited to Oaks, and that it has been remarkably well drained and guttered, to prevent any water lodging upon it, to the injury of the young trees. The plantation will meaſure, within the fence, at leaſt fourteen acres. Underneath you will ſee the Certificate of my gardener, which I hope will be ſatisfactory to the Committee, eſpecially as I have had the honour of ſhewing you the plantation alluded to; but, if any other teſtimony ſhould be required, I ſhall be happy to ſend it you. I cannot help entertaining a wiſh that I may be a ſucceſsful Candidate for the Medal, as I have ſpared neither expence nor trouble

trouble to execute the work in as perfect a manner as poſſible.

I am, SIR,

Your obedient humble Servant,

J. R. LLOYD.

Aſton, October 26, 1795.

Mr. MORE.

I HEREBY certify, that the foregoing ſtatement of trees planted by the Rev. J. R. Lloyd, of Aſton, in the county of Salop, is accurate in every reſpect, as I attended the whole of the buſineſs, and made memorandums daily during its progreſs.

J. FAYEL, Gardener to the Rev. J. R. LLOYD.

P. S. I have, as it may perhaps ſave trouble, requeſted the clergyman of the adjoining pariſh to certify, that a plantation as before deſcribed has been made.

I WILLIAM DAVIES, Clerk, Vicar of Saint Martin's, in the county of Salop, do hereby certify, that a plantation of Oaks has been made by the Rev. John Robert Lloyd, of Aſton, according to the manner deſcribed by him in the foregoing letter, and that I firmly believe every ſtatement made by him therein to be perfectly accurate.

W. DAVIES.

Saint Martin's,
October 26, 1795.

The

The SILVER MEDAL was this Seſſion voted to THOMAS RICHARDSON, of Handale Abbey, in the North Riding of Yorkſhire, Eſq. as a token of the Society's approbation of his ſpirited conduct in forming the Plantation, although, from the Papers not having been received in due time, he could not be conſidered as entitled to the Premium offered for making ſuch plantations.

SIR,

THE Society inſtituted for the Encouragement of Arts, Manufactures, and Commerce, having offered a Premium of a Gold Medal for planting the greateſt number of mixed Timber-Trees, I beg leave to become a candidate for the truly honourable prize, having planted, from the month of October, 1789, to the end of February, 1791, upon forty acres of land, within my eſtate, one hundred and twenty-one thouſand four hundred and thirteen Timber-Trees of various kinds, and encloſed the whole by a quick-hedge of hawthorn;

the particulars of which, with their healthy growing ſtate at this time, will be more fully explained and proved in the Certificate encloſed in the paper ſuperſcribed Silva.

My LORDS and GENTLEMEN,

HAVING purchaſed the eſtate of Handale Abbey, in the North Riding of Yorkſhire, on which there were about forty acres of land which had been formerly full of Timber-Trees, but which were for the moſt part cut down and deſtroyed, very little remaining but the underwood, and this overrun and browzed upon by the cattle, the fences being entirely thrown down, and the whole ſo much neglected, as to give no promiſe whatever of any wood riſing from the old ſtocks, even if the whole was again encloſed; in this ſituation I immediately formed my reſolution of planting the whole afreſh; and, notwithſtanding the expence which ſeemed likely to accrue from the great length I ſhould have to encloſe and ſecure with good fences, it being a narrow

narrow ſlip of land in form of a creſcent, on the declivities of the hills deſcending into a valley, one fourth part round the eſtate, yet I was not from this conſideration driven from my purpoſe, being convinced that it would grow excellent Timber, and produce in time more profit than could be expected from cultivating the land. I therefore began to plant it in October, 1789, with mixed Timber-Trees, of the following kinds:—Oak, Aſh, Elm, Beech, Sycamore, Alder, Larch-Fir, Spruce-Fir, Scotch-Fir, the white Dutch Poplar, and the black Carolina Poplar, diſpoſing each plant in the ſoil beſt adapted to its growth; by the end of February, 1791, I had completed the whole, which contained one hundred and twenty-one thouſand four hundred and thirteen trees, around which I planted a fence of hawthorn, ſecured by an outer fence, compoſed in part of poſts and rails, and part of ſtake and band hedge. I have the ſatisfaction to ſay, that the trees are in a very healthy thriving condition, moſt of them indeed are remarkably luxuriant; and having kept the hedge clean, it is

now

now become a very good fence, as is proved in the incloſed Certificate. I am, with the greateſt reſpect,

My LORDS and GENTLEMEN,

Your obedient humble ſervant,

THOMAS RICHARDSON.

Mancheſter,
October 24, 1795.

Mr. MORE.

HAVING worked for ſome time in the plantations at Handale Abbey, I do hereby certify, that the trees planted therein are in a moſt flouriſhing condition: as a proof of this aſſertion, there are ſome white Dutch Poplars which were planted in February, 1791, and were then no more than two feet high, and not two inches in circumference, which I meaſured this day, and they are now twenty inches and a quarter in circumference at the bottom, and eighteen inches in circumference a foot from the ground, and twenty-ſix feet four inches high. Theſe plants were ſent from Mancheſter, a diſtance of one hundred and twenty miles, there

there not being any of the kind before in this part of the country that I know of; and Thomas Richardſon, Eſq. was deſirous of introducing them here, thinking they would ſucceed very well, and the reſult has proved his opinion to be right. This tree grows ſo very well in different ſituations in the wood, that we propagate numbers of them in the nurſery every year, which are eaſily raiſed from cuttings ſtuck in the ground when well trenched.

THOMAS GOODLAD, Gardener.

Staithes,
October 24, 1795.

I DO hereby certify that Thomas Richardſon, Eſq. planted on his eſtate at Handale Abbey, in the North Riding of the county of York, from the winter of 1789 to the end of February 1791, one hundred and twenty-one thouſand four hundred and thirteen trees of various kinds; and encloſed the whole with a living hedge of hawthorn, of the length of ſix hundred and eighty-one rods, of ſeven yards to the rod, which I

meaſured in conjunction with the Rev. Mr. Harriſon, curate of Lofthouſe. I have daily oportunities of viewing this plantation and encloſure, which has grown extremely well, many of the trees indeed ſurpriſingly: the hedge is kept with the utmoſt neatneſs, and is already become an excellent fence, and, from the cleanneſs with which it is kept, forms abeautiful ſcene around the wood.

GEORGE SANDERSON.

Handale Abbey,
October 23, 1795.

The

The following Account having been received from LEWIS MAJENDIE, of Hedingham-Caſtle, Eſſex, Eſq. TWENTY GUINEAS, being the Premium offered for the Culture of BEANS and WHEAT, was this Seſſion adjudged to him.

SIR,

THE Society for the Encouragement of Arts, Manufactures, and Commerce, having thought fit to offer a Premium to the perſon who ſhall have planted or drilled, between the firſt of December, 1793, and the firſt of April, 1794, the greateſt quantity of land (not leſs than ten acres), with Beans, and ſhall have ſown the ſame land with Wheat, in the ſame year 1794; I am induced to ſubmit the following account to the inſpection of the Society, in which it will be found, that fifteen acres of land, part of my farm, have been cultivated preciſely after the manner preſcribed by their conditions.

Two fields, the one of eight, the other of ſeven acres, were planted with Beans in the month of February, 1794; the ſoil of the former field is a tender clay; of the latter, a rich mouldy earth, it having only been three years under the plough, and, previous to this, a paſture beyond memory. The Beans, which which were of that ſmall ſpecies called Horſe Beans *(vicia faba equina)*, were planted in the Norfolk mode, by children dropping them ſingly into holes, made on the ſoil with iron hand-dibbles, in rows about one foot aſunder, and with a diſtance of four inches between the holes in the rows: this proceſs is doubtleſs ſo well known to the Society, as to need no further explanation in this place. The quantity of ſeed planted on each acre was ſix pecks; and the total expence, in dibbling, dropping, ploughing, harrowing, ſeed, hand-hoeing, reaping and thraſhing, was twenty-nine pounds, fourteen ſhillings, and threepence, or one pound, nineteen ſhillings, and ſevenpence farthing, per acre.

The crops from theſe fields were reaped, and bound in ſmall ſheaves or bundles, which were

were ſet up to dry in ſeparate parcels, each of four ſheaves; the reaping began on the 18th of Auguſt, 1794, and was continued, as the weather ſuited, till the end of that month.

On the 4th and 5th of September, the crop, from the field of ſeven acres, was carried in fifteen large waggon loads; and the field of eight acres was carried alſo in fifteen waggon-loads, by the 13th of the ſame month.

The produce of both fields was ſo carefully ſeparated in the barns, as to prevent any miſtake being made in the amount of either.

That from the field of eight acres was twenty-nine quarters, one coomb, and three buſhels, or twenty-nine buſhels, three pecks, and eight pints, per acre.

That from the field of ſeven acres was twenty nine quarters and two buſhels, or thirty-three buſhels, one peck, and eleven pints, per acre.

The whole quantity of Beans produced from theſe fifteen acres, was fifty-nine quarters and one buſhel, which were ſold for

one hundred and twenty pounds, eleven ſhillings, and ſixpence.

The Bean ſtraw was uſed as litter in the winter 1794, for ſeveral beaſts which were fattening on cabbages in the yard, adjoining the barns in which the Beans were thraſhed; by this means a great quantity of manure was made, which has ſince been carted out upon a large heap of earth and chalk, and now forms a rich and highly valuable compoſt for the future benefit of the farm.

Upon theſe fields, and with one earth or ploughing, Wheat was ſown broad-caſt between the 13th and 18th of October, 1794, and the reſulting crops completely harveſted on the 5th of September, 1795.

The ſame caution was uſed in ſeparating the crops as on the former occaſion; and the thraſhing of both being now fully completed, I am enabled to inform the Society of the exact produce of Wheat from each field.

The field of eight acres has produced twenty-five quarters, one coomb, and three buſhels, or per acre, twenty-five buſhels, three pecks, and eight pints.

The field of ſeven acres has produced thirty-four quarters and two buſhels, or thirty-nine buſhels and nine pints per acre.

The great comparative fertility in this field, it ſhould however be remembered, is to be aſcribed to the ſmall length of time it has been under the plough, and that this is the firſt crop of Wheat from it within the memory of man.

I have tranſmitted for the Society's inſpection, a ſmall ſample of Beans, the produce from theſe fields in 1794, and two buſhels of the Wheat from the preſent crops, for their acceptance, which laſt might ſeem indeed unneceſſary, but that, from the whiteneſs of its flower, and thinneſs of its bran, I conceive it not unworthy of their attention, eſpecially as it is not yet too late to be diſtributed and ſown in the preſent ſeaſon.

The ſtock from which this Wheat is produced was purchaſed by me two years ſince, from Mr. William Pollet, a very ingenious and active farmer, in the pariſh of Great Bardfield, in this county, who, a few years ago, paid ſingular attention to the various colours obſervable in the bloſſoms or an-

thera of Wheat, when in complete efflores-cence: he noticed on his farm ſeveral ears whoſe bloſſoms were of different colours; theſe he reſerved apart when ripe, and then patiently cultivated the ſeed ariſing from them in ſeparate ſpots in his garden; the reſult has been a very high opinion of the preſent variety, of which he has ſince raiſed a conſiderable quantity.*

Such is the preſent good opinion entertained in my neighbourhood of this Wheat, that the greater part of the produce from theſe fields (except what was reſerved to ſow on my farm) has been eagerly purchaſed for ſeed.

I have the honour to be,

SIR,

Your very obedient humble ſervant,

LEWIS MAJENDIE.

Hedingham-Caſtle, Eſſex,
November 3, 1795.

Mr. MORE.

Expences

* This circumſtance is noticed in page 25 of the General View of the Agriculture of the County of Eſſex, drawn up by Mr. Charles Vancouver, for the conſideration of the Board of Agriculture and internal improvement.

Expences attending the Bean Culture in Great Caſtle Field, containing Eight Acres, and in Cox Field, containing Seven Acres, (in the whole Fifteen Acres), in the year 1794, which Fields were ſown with Wheat at the end of the ſame year.

			s. d.	l. s. d.
1794 February.	To Charles Green Brighton, for 7 days work as dibbler in Cox Field -	at	1 6 -	0 10 6
	To ditto, for ſeven days and one half, in Great Caſtle Field -	at	1 6 -	0 11 3
	To ſundry children dropping Beans - -			2 2 5
	To ploughing 15 acres, at 5s. per acre -			3 15 0
	To buſh-harrowing 15 acres -	at	0 3 -	0 3 9
	To 25 buſhels Horſe-beans,	at	6 0 -	7 10 0
March 25 to June 26	To hand-hoeing 15 acres three times -	at	10 6 -	7 17 6
Auguſt 18	To reaping 15 acres	at	5 0 -	3 15 0
Nov. 3 to Dec. 24	To thraſhing 59 quarters 1 buſhel of Beans	at	1 2 -	3 8 10
				£29 14 3

Amount

Amount of the Produce and Sale of the Beans grown in Great Caſtle Field, containing eight Acres, in 1794.

1794	Qrs.	C.	B.	P.			£.	s.	d.
November 3	16	1	2	0	ſold to Joſeph Tomlinſon, —	at 42s.	35	3	6
	0	0	1	2	refuſe beans reſerved for home uſe	at 4a. per buſh.	0	6	0
22	0	0	3	2	ditto — —	at 4s.	0	14	0
25	0	1	0	0	ſold to Ann Kent — —	at 5s.	1	0	0
28	12	0	0	0	ſold Mr. Tabor, at Colcheſter —	at 41s.	24	12	0
	29	1	3	0			£.61	15	6

Amount of the Produce and Sale of the Beans grown in Cox Field, containing ſeven Acres, in 1794.

1794	Qrs.	C.	B.	P.			£.	s.	d.
December 5	13	0	0	0	ſold to Mr. Tabor, at Colcheſter	at 41s. per quarter	28	13	0
11	2	0	0	0	ditto — —	at 41s.	4	2	0
1795	0	0	2	0	reſerved for home uſe (refuſe) —	at 4s. per buſh.	0	8	0
January 11	14	0	0	0	ſold Mr. Green, at Colcheſter —	at 39s. 6d. per qr.	27	13	0
	29	0	2	0			£.58	16	0

Rotation of Crops for Six Years.

GREAT CASTLE FIELD (EIGHT ACRES.)		COX FIELD (SEVEN ACRES.)	
1790	Barley	1790	Paſture, beyond memory
1791	White Oats and Clover	1791	Black Oats
1792	Clover	1792	White Oats
1793	Wheat	1793	Barley
1794	Beans	1794	Beans
1795	Wheat	1795	Wheat

I, CHARLES GREEN BRIGHTON, Game-keeper to Lewis Majendie, of Hedingham Caſtle, in the county of Eſſex, Eſq. do hereby certify, that in the month of February, 1794, two fields, called Great Caſtle Field, containing eight acres, and Cox Field, containing ſeven acres, part of the farm of the ſaid Lewis Majendie, Eſq. were planted with Horſe Beans in the Norfolk manner, by dibbling; the whole of the dibbling being done by me, and the Beans dropped into the holes by children: that the quantity of ſeed ſown to each acre was ſix pecks, that the Beans were duly harveſted, and the produce from each field ſeparated in the barn. And I further certify, that at the cloſe of the year 1794 the above-mentioned fields were ſown with Wheat.

CHARLES G. BRIGHTON,
Game-keeper to Lewis Majendie, Eſq.

Hedingham Caſtle,
November 3, 1795.

I, BARKER MYALL, Churchwarden of the pariſh of Caſtle Hedingham, in the county

county of Eſſex, do hereby certify, that in the year 1794 I frequently ſaw two fields, named Great Caſtle Field, containing eight acres, and Cox Field, containing ſeven acres, part of the farm of Lewis Majendie, Eſq. that they were ſown with Beans in the early part of the year, and with Wheat at the cloſe of the ſame year; that I have examined the minutes and accounts kept by Mr. Majendie during the growth of both crops, and do verily believe the facts ſtated by him, as alſo the contents of the annexed Certificate, ſigned Charles Green Brighton, to be ſtrictly true.

BARKER MYALL,
Churchwarden of the pariſh of Caſtle Hedingham.

Caſtle Hedingham, Eſſex,
November 3, 1795.

Mr. MORE.

The

The GOLD MEDAL, or FIFTY GUINEAS, being the Premium offered for cultivating POTATOES on the greateſt quantity of Land, not leſs than twenty acres, ſuch Land not having been planted with Potatoes within the laſt ten years, was this Seſſion adjudged to JOHN KINGSTON, of Oak Hill, near Barnet, Herts, Eſq. who made choice of the Pecuniary Reward, and from whom the following Papers were received.

SIR,

WITH this you will receive a Certificate of the quantity of land cultivated by me laſt year with Potatoes: two thirds of the ſaid land was a light gravelly ſoil, and the other a ſtrong clay; about four acres were planted in the manner recommended by the Board of Agriculture laſt year,* one acre

* The mode alluded to, as recommended by the Board of Agriculture, was to draw furrows in the prepared ground, about three feet aſunder; in thoſe furrows the dung (about fifteen large loads to the acre) was laid, then the ſets were dropped on the dung, about nine inches aſunder, and covered by the plough.

acre in the lazy-bed way, and the remainder in the uſual manner, dropping the ſets in the furrows after the plough, and earthing them up as the plough returned. The produce of the firſt was by much the fineſt, but not quite ſo abundant as the latter; that of the lazy-bed was not ſo much as either; but after the Potatoes were taken up with forks, the ground was in fine dry condition for dibbling in Wheat, which now looks exceedingly healthy and fine, and took only a peck and a half of ſeed to the acre.

I am perſuaded that no Premium has ever been offered by the Society in the agricultural way, that will be attended with ſuch general advantage to the country as that for encreaſing and improving the growth of Potatoes; as it will (if the Premiums are continued) bring into cultivation thouſands of acres that the owners would never have thought of cultivating without ſuch encouragement: and to render it more generally beneficial, I beg leave to ſuggeſt, that were the Premiums to begin with a lower quantity of land, it would induce a great many little farmers

farmers to cultivate from five to ten acres, who cannot ſpare dung and labour for more; *, and were the claimants obliged to lay not leſs than ten loads of dung on each acre, it would be the beſt preparation in the world for Wheat, which ought to be ſown as ſoon as the Potatoes are got out.

I am, Sir,

Your moſt obedient humble ſervant,

JOHN KINGSTON.

January 19, 1796.

Mr. MORE.

WE, John Pratt, Bailiff to John Kingſton, Eſq. of Oak Hill, in the pariſh of Eaſt Barnet, in the county of Hertford, and William Robinſon, Ploughman to the ſame, do hereby certify, that we cultivated on the farm of the ſaid John Kingſton, at Oak Hill aforeſaid, twenty-four acres of land, formerly wood and chaſe land, in

* See the Conditions for the Premiums offered this Seſſion for encreaſed Culture of Potatoes, page 33.

in the year 1795; ſuch land not having been planted with Potatoes within the laſt fourteen years, as the ſaid William Robinſon is ready to atteſt on oath, if required. Witneſs our hands, this 18th of January, 1796.

JOHN PRATT,

WILLIAM ROBINSON.

In conſequence of the following Papers and Certificates relative to the culture of RHUBARB, the GOLD MEDAL, being the Premium offered for that article, was this Seſſion adjudged to Mr. ROBERT DAVIS, of Minehead, Somerſetſhire.

An Account of the ſoil, culture, and aſpect, of the Plantation of Rheum Palmatum, or true Rhubarb, conſiſting of nine hundred and thirteen plants.

THE ſoil on which they now ſtand is light, but not what may be termed a light black ſoil. The ground is a ſpot in a field quite open to all parts, and without any declivity. The ſeeds were ſown very thick about the month of July, 1786, in a ſmall ſpot in a garden, where they remained till the following March, when the roots were all taken up, and tranſplanted at the diſtance of ſix inches; here they remained till the following ſpring, when I cauſed the ground where they now ſtand, being then a fallow, to be ploughed, and, at the diſtance

of four feet, pits to be dug two feet deep, and to be filled again with one half rotten dung, and the other half the earth taken out of the ſaid pits, and ſifted; thus raiſing the ſame four inches above the common level, to allow for ſinking: I then planted one thouſand and fifty three plants or roots. During the firſt ſummer and winter, a very conſiderable number of plants, from ſome unknown cauſe, died; and in the next ſpring, having a quantity of roots left in my plantation bed, I filled up all the vacancies completely; ſince which time to the preſent, one hundred and forty plants have died, and nine hundred and thirteen are ſtill alive and flouriſhing. I can give no account of the cauſe of any of their decay, but imagine it to have been occaſioned from the rains in winter. I conſtantly kept the land clean from weeds, by hoeing, and have no other trouble with it.

ROBERT DAVIS.

Minehead,
September 29, 1795.

THIS

THIS is to certify, that we, William Hill, and Anthony Mogford, gardeners and labourers, of Minehead, did aſſiſt Robert Davis, of this place, in preparing the ground to plant out one thouſand and fifty-three plants of the Rheum Palmatum, or true Rhubarb; and which were planted out accordingly, at the diſtance of four feet from each other. One hundred and forty of thoſe plants, have, from unknown circumſtances, ſince died: there are now ſtanding and growing, in a thriving condition, and have been ſo during the laſt ſummer, nine hundred and thirteen of the ſaid plants. Witneſs our hands,

WILLIAM HILL,
ANTHONY MOGFORD.

Minehead,
September 29, 1795.

WE whoſe names are hereunto ſubſcribed, being gentlemen, and reſidents in the town of Minehead, in the county of Somerſet, do hereby certify, that Robert Davis, of the ſame place, has, in a

of four feet ... arish, a p
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the ... ts wer
l ... ng the last summer.

PHILIP BALL,
FRANCIS BLAKE,
JOHN JENKINS,
PETER PRIEST.

Minehead,
September 29, 1795.

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ntione hink it an object,
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oted their o ſow the
LAS ASHTON, If it is
Liverpool, Eſq. whole
mail
in

SIR,

THE beginning of this month I ordered my gardener to take up four roots of Rhubarb, which I received about ſixteen years ago from Orford, in this county. After being cleared from the ſoil, I had the curioſity to weigh them; and, although from their age and want of a ſufficiency of ſoil (it being only two feet deep before the roots touched the red rock), which cauſed the principal tap root to decay, yet the ſound roots, ſo cleared, weighed ſeventy-three pounds. After cauſing the bark to be pared off the large roots, and ſcraped off the ſmall ones, I directed the whole to be cut into pieces, and laid upon

piece of ground in this pariſh, a plantation of Rheum Palmatum, or true Rhubarb, conſiſting of nine hundred and thirteen plants, at the diſtance of four feet from each other; all which plants were in a thriving condition during the laſt ſummer.

PHILIP BALL,
FRANCIS BLAKE,
JOHN JENKINS,
PETER PRIEST.

Minehead,
September 29, 1795.

The

In conſideration of the merit of the Rhubarb mentioned in the following Papers (ſamples of which are reſerved in the Society's Repoſitory), the Society have this Seſſion voted their SILVER MEDAL to NICHOLAS ASHTON, of Woolton Hall, near Liverpool, Eſq.

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FRANCIS BLAKE,
JOHN JENKINS,
PETER PRIEST.

Minehead,
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piece of ground in this parish, a plantation of Rheum Palmatum, or true Rhubarb, consisting of nine hundred and thirteen plants, at the distance of four feet from each other; all which plants were in a thriving condition during the last summer.

PHILIP BALL,
FRANCIS BLAKE,
JOHN JENKINS,
PETER PRIEST.

Minehead,
September 29, 1795.

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the flue of one of the ſucceſſion houſes of my pinery, with a ſmall fire to dry the Rhubarb gradually: it has dried it much to my wiſhes; and this day, being perfectly cured, the roots weighed, in their preſent dry ſtate, fourteen pounds and a half, and the bark three pounds and a half.—This amazing decreaſe of weight has rather diſappointed me; but I mention theſe particulars, as you wiſhed to be informed how I ſucceeded; and it gives me no little pleaſure to find that Rhubarb of ſo good quality, and with ſo little trouble, can be raiſed in this country.

I firmly believe that the four roots above mentioned would have produced an equal quantity of Rhubarb, had they been taken up ten years ago, if they had been planted in a deeper ſoil. They were continued in my garden for ſo long a ſpace, as ornamental and curious plants, being the Rheum Palmatum; they flowered very ſtrong, and perfected their ſeeds, which, until laſt year, the gardener had diſregarded.

I have now gathered a conſiderable quantity, and, if the Society think it an object, will order a field to be prepared, and planted out next ſpring; and you will be kind enough to adviſe me, whether to ſow the ſeeds this month, or in February. If it is deſired, I will ſend the Society the whole produce of my four roots by the mail coach, for inſpection, the firſt Tueſday in November. With reſpect to the culture, the Rhubarb was planted in 1778 or in 1779, in good vegetable ſoil, in my garden, and remained undiſturbed, but kept clear from weeds, until October, 1795, when it was taken up and cured, as mentioned in this letter.

I am, SIR,

Your very humble Servant,

NICHOLAS ASHTON.

Woolton Hall, near Liverpool,
October 22, 1795.

Mr. MORE.

The GOLD MEDAL, being the Premium offered for gaining and ſecuring Land from the Sea, was this Seſſion adjudged to Mr. RICHARD MOYLE, of Marazion, Cornwall, from whom the following Account and Certificates had been received.

SIR,

I BEG the favour of you to lay the incloſed Papers before the Society for the Encouragement of Arts, Manufactures, and Commerce.—They contain a particular account of the drainage of a Marſh near this place, which for centuries has been overflown by the tides, and hitherto looked on as irreclaimable; and which land is abſolutely gained from the ſea.

The novelty of the mode of drainage, with the ſucceſs attending it, may probably attract the attention of thoſe intereſted in Marſh Lands near the ſea, in ſimilar circumſtances; and, from the proſpect of ſucceſs in its cultivation, a ſpirit of enterpriſe may

may be excited in this country to make ſimilar attempts.

Certificates of the ancient and preſent improved ſtate of the Marſh, with a plan* of the incloſure, exhibiting the drains, fields, their meaſurement, &c. are annexed. From my experiments on marſh or peaty land, I have ſubjoined an account of the beſt method of cultivating the ſame, with the attendant expences; and alſo an account of the various uſes to which peat, as an article of fuel, may be moſt advantageouſly applied; and which were never known to have exiſted in this Marſh before it was drained.

As my deſign of communicating the incloſed, ariſes from an ardent wiſh of promoting the laudable views of Agriculture, I hope the Society will excuſe this irregular Treatiſe, which the want of time prevents me from arranging more methodically. Should the Society approve of my attempts to introduce the recovery and improvement

* The plan here mentioned is reſerved for the inſpection of the public.

provement of ſuch lands, which are greatly neglected in this county, I ſhall think myſelf highly honoured by any mark of approbation which they may think proper to confer on,

SIR,

Your moſt obedient humble Servant,

RICHARD MOYLE,

Marazion,
October, 1795.

Mr. MORE.

An Account of the Drainage of a Marſh near Marazion, in Cornwall, formerly overflown by the Sea, and looked on as irreclaimable, but now in a ſtate of cultivation.

ON purchaſing the leaſehold of an eſtate near Marazion, in Cornwall, conſiſting of about two hundred acres, I found ſeventy in a ſtate of good cultivation, and one hundred and thirty acres of waſte land, conſiſting of marſh, croft, and ſandy ſoils. I flattered myſelf, that a great part of this unprofitable

unprofitable ſpot might be converted into uſeful and valuable land, which, in this neighbourhood, in the common ſtate of cultivation, is worth from three to ſix pounds the Corniſh acre (about one-fifth part larger than ſtatute meaſure). From a proſpect of recovering that part called the Marſh, which had hitherto been accounted irreclaimable, I laid down a plan of draining the ſame, which, if I ſucceeded in, might probably induce the proprietors of other tracts of Marſh-land in this vicinity, to make ſimilar attempts.

The novelty of my draining ſcheme, with its attendant difficulties, joined to the great diſlike which moſt farmers in the Weſt of England have to the improvement of Low Lands, drew on me the cenſure of the public, who treated the ſcheme as chimerical, and impoſſible to be effected, for the following reaſons:

Firſt—Becauſe the ſea had acceſs to this land, and overflowed it at ſpring-tides with two feet water;

Secondly,

Secondly—If the ſea were excluded, the freſh water would be accumulated, and ſtill keep it in the ſtate of a bog, as the water had no other vent than by its direct communication with the ſea; and,

Thirdly—That if the ſucceſs in the drainage ſhould be equal to my moſt ſanguine expectations, yet the nature of Marſh land, in general, would not admit of any valuable improvement.

However cogent theſe reaſons might appear to the public, I was convinced that they aroſe more from the want of a ſpirit of enterpriſe, and little knowledge of the nature of ſuch ſoils, than from a decided conviction of the failure of the plan; and, on conſidering the advantages likely to reſult from the improvement, in caſe of ſucceſs, and the example given to my countrymen, who poſſeſs ſimilar tracts of Marſh-land, I was emboldened to undertake the drainage of this bog, which for time immemorial had been looked on as utterly irreclaimable.

The

The ſpot fixed on for the intended improvement, conſiſted of ſixty-three acres, ſtatute meaſure; of which thirty-ſix acres were Marſh, ſeventeen acres of a light blackiſh ſand, and ten acres of croft, conſiſting of a light black mould, with a ſubſtratum near the ſurface, of a fine tenacious clay. The croft and ſandy land lay on a riſing ground, ſerving as a ſurrounding ſkirting to the Marſh, and which, from their gentle elevations, might be uſeful in rainy ſeaſons for cattle to reſort to.

On conſidering that the moſt fertile ſoils conſiſt of a combination of clay, ſand, and vegetable matter, in different proportions, and that theſe three ſubſtances were almoſt diſtinct, and to be procured in any quantity from this improvable ſpot, it appeared probable that, after a complete drainage was performed, little more remained to be effected, than a happy combination of theſe three ſoils, ſo contiguous to each other, to render the whole good and productive land.

The

The Marſh, containing thirty-ſix acres, is ſituated between the croft and the ſandy ſoil, which has been thrown up by the ſea, and ſerves as a natural embankment againſt the water, which at every ſpring-tide overflowed this Low-land to the height of two or three feet, by a direct communication of a river which carries off a part of the redundant water collected on its ſurface, from its own ſprings and others in its vicinity, and the rain from the higher grounds.

This Marſh, for time immemorial, has produced nothing but ruſhes, flags, goſs (*arundo phragmitis*), *iris paluſtris*, water-lily, and ſeveral other aquatic plants, which, from their verdure, ſerved only as a decoy for cattle, that were frequently ſmothered in attempting to reach them, to the great loſs and injury of the tenants. Several perſons alſo have loſt their lives by getting at night into this moraſs, over which boats have frequently paſſed to enable ſportſmen to ſecure the game, which flocked to this place in great quantities during winter. From the production of *Marſh miaſmata*, fevers of the low

low nervous kind, but particularly agues, have greatly prevailed, to the annoyance and diſtreſs of the neighbourhood.

The great and inſuperable difficulty, which hitherto prevented even an attempt towards the draining this bog, aroſe from its being under the level of the ſea at ſpring-tides; ſo that no deeper outlet could be procured than the river, which ſupplied it with ſalt-water. But, on conſidering the nature of water, which preſſes equally on every ſide, I ſuſpected that a pipe, with a valve at its extremity, introduced at half-ebb, through the ſandy embankment, to the body of the Marſh, would tend to carry off the ſurface-water; and, from the ſhutting of the valve, on the approach of the tide, no ſea-water could gain admittance through the tube. On taking an accurate ſurvey of the levels from the ſea, at the point of half-ebb, to the ſurface of the ground in the Marſh, meaſuring in length one hundred and ſeventy-four yards, it was found that ſix feet of level could be gained, after allowing two feet for the flowing of the water

water through the pipe; accordingly, an embankment of one thouſand one hundred and ſeventy-five yards in length, formed of ſtrong clay turf, about five feet high and ſix feet thick, was made round the two ſides of the Marſh, which were liable to be overflown by the ſea; the ditch ſerving as a channel to carry off the water, which uſed to flow over its ſurface. In order to carry off the water ſtill remaining on the Marſh, I procured one hundred and ſeventy-four yards of ſquare pipe, nine inches diameter and two inches thick, made of ſound fir-wood called balk, which, in the mines of this county, is the wood moſt commonly made uſe of, and found to be very durable, eſpecially if kept conſtantly in water.

In May, 1793, the firſt pipe was laid down on the ſhore, at the point of half ebb, and ſecured by means of a large rock, to prevent it from ſwimming; the other pipes were ſucceſſively joined, and laid nearly on a plane with the firſt, by throwing open the ſand. As we advanced to the higheſt part of the ſandy embankment, which was twenty-four

feet

feet above the pipes, the difficulties were conſiderably increaſed, by the great quantity of ſand neceſſary to be removed, and its tendency to fall on the workmen; ſo that the approach towards the Marſh became tedious, and very expenſive. However, by purſuing every cautious plan which could be deviſed, to prevent accidents, and to make the work ſecure, we arrived, in five weeks time, at the borders of the Marſh, paſſing under the river and the new-made embankment at the depth of ſix feet under the ſurface, where the pipe opened into a reſervoir of eighteen feet ſquare and eight feet deep, prepared to collect the ſurface-water, which immediately flowed through the pipe with great rapidity, and diſcharged itſelf into the ſea, till the whole of the ſtagnant water was taken off. The aperture of the ſea-pipe had iron-bars placed before it, to prevent the inſinuation of extraneous bodies, and alſo a valve made of ſtrong wood, lined and hung with leather, and loaded with iron, to prevent it from ſwimming at the approach of the tide,

which always ſhut it ſo cloſe as to effectually exclude the ſea-water: the pipe within the reſervoir had alſo a ſimilar valve, for the ſame purpoſe, near its extremity, which was covered with an iron grating, to prevent the intruſion of roots, weeds, &c. that might probably obſtruct the paſſage of the water.

As ſoon as the tide returns to the pipe, which is uncovered ſix hours in twelve, the Marſh Water ceaſes to flow; and, during that time, collects within the reſervoir and trenches till the ſea begins again to retire; and when the collected water becomes of equal weight with the ſea water over the ſhore pipe, it ſinks gradually till the pipe is left by the ſea, when it regularly diſcharges the water ſtrained from the Marſh Land; and which amounts in winter to about 129,600 gallons, or 2160 hogſheads in twenty-four hours; but, in ſummer, the quantity is trifling, and does not exceed 43,200 gallons or 720 hogſheads. Some little difficulty at firſt aroſe from the valve not ſhutting itſelf properly, by the intruſion of pebbles; but this

was

was eaſily removed, by adding about two feet of pipe beyond the valve.

Trenches or open drains of three feet deep, five feet wide at the top, and three at the bottom, were immediately carried from the reſervoir, which was the loweſt place, to the extreme parts of the Marſh, on the ſandy ſide, about ſix feet within the new embankment, and interſected by others at right angles towards the croft, from fifty to ſeventy-two yards diſtance, according to the nature of the ground, dividing the whole into regular oblong fields, as in the plan; the wetneſs of the ſoil, and the great difficulty of procuring a firm footing for the workmen, obliged them to ſtand on pieces of timber, to complete thoſe numerous drains, which every day grew firmer; and in a few weeks the ſoil became ſo conſolidated, as to admit of perſons walking over it with tolerable ſafety. In making theſe drains a pot of copper coins, containing about one thouſand, was diſcovered at the depth of three feet from the ſurface, which, on examination, appeared to belong to the Emperor Victorinus, who reigned in the third century;

theſe coins were much injured by the corroſion of the marine acid, but ſeveral were ſtill perfect enough to trace the outlines of the Emperor.

As ſoon as the evaporation aſſiſted the conſolidation of the ſurface, the air, within a mile of the Marſh, became ſo ſtrongly impregnated with a ſulphureous ſmell, as to render the place quite obnoxious to paſſengers, till the ground was perfectly dry: this might probably happen from the evaporation of the fluid parts, producing a decompoſition in the mud, forming therein a *hepar ſulphuris*; or hepatic air may be eaſily produced, by adding ſea water to dung, or vegetable ſubſtances, from the vitriolic ſalts contained in the water, and which probably was the caſe in this ſoil. In the courſe of a few months the ſurface of the Marſh was depreſſed from twelve to eighteen inches; ſo that the bed of the river became higher than the ſurface of the land.

In making the drains, it was diſcovered, that the upper ſtratum, of two feet and a half, conſiſted of a dark-coloured mud, formed from

from the ſediment of ſtagnant water and a peaty ſubſtance, bound firmly together by an infinite number of the goſs and ruſh roots; the ſubſtratum, an entire body of peat three feet and an half deep, of which twenty-one inches are of a very black colour, and the loweſt part of a light browniſh or deep yellow; under the peat lies a ſtratum of ſand about five feet deep, which carries evident marks of its being the bed of the ſea, of a very ancient date, and which has been gradually excluded by means of the accumulation of muddy ſediments, and the dropping of the leaves, &c. of aquatic plants; and which together form peat moſs. The horizontal poſition of the leaves and ſtems, which are eaſily diſcovered in the peat, is a ſtrong preſumption of thoſe bodies having fallen down, and being buried by the conſtant accumulation of mud, which with the leaves are the component parts of peat, though by ſome it has been ſaid to be a vegetable production, *ſui generis*. The total excluſion of air is abſolutely neceſſary before theſe bodies will aſſume the real appearance

or properties of peat moſs; and it is probable, that the upper ſtratum, which at this time partakes of very little of real peat, would at a future period, by the gradual addition of ſimilar bodies and the excluſion of air, poſſeſs the ſame qualities and properties as the under ſtratum, and by this gradual accumulation totally exclude the ſea. But the coins found in the Marſh indicate that the production of peat moſs has been very ſlow in this particular ſpot.

The ſtratum of ſand under the peat does not appear to be the original bed of the ſea; for on ſtreaming or ſearching for tin, from ſix to ten feet deeper, another ſtratum was diſcovered, conſiſting of round ſmooth pebbles and gravelly ſubſtances containing tin; among which are bodies of trees, and a large number of hazel-nuts in the moſt perfect ſtate, and which muſt have been collected in this place by means of ſome extraordinary inundation, that ſwept thoſe beds away from the higher lands.

In conſequence of the diſcovery of peat in this Marſh, a large quantity has been cut up,

up, dried, and made uſe of as an article of fuel, for a variety of purpoſes, to which it is admirably adapted, and ſold at a much cheaper rate than coals, and boils water in much leſs time; it is applied in public breweries, and for every culinary purpoſe as an article of fuel; it is made uſe of to great advantage in grates, hearths, or ovens, and, when coaked, will ſerve for the niceſt operation in chemiſtry, and in that ſtate is ſufficiently ſtrong to ſmelt metals of the moſt difficult fuſion: experiments are now making on it to calcine lime, which is intended as manure for this land. This peat produces a ſmall quantity of red aſhes, which, on lixiviation, are found to contain a large proportion of ſea ſalt, which, for land not already impregnated with the marine acid, will prove a valuable manure.

After the drains were finiſhed, all further operations on this land were diſcontinued till the ſpring of 1794, when the ſurface of a great many acres, conſiſting of light ſedgy ſubſtances, was pared and burned during the ſummer, and the aſhes ſpread over the land,

afterwards the plough was introduced, to deſtroy the amazing growth of the *arunda phragmitis*, which, from the infinite number of its ſtrong ſpreading roots, bound the ſurface ſo firmly together, as to require a numerous team of cattle to plough it a proper depth, and which, from their frequent treading over the ſame ground, rendered the ſoft parts impaſſable; but this difficulty was overcome by ploughing the firſt time without a mould board, ſo that fewer oxen were able to perform the ſame work. The ſoil, on being turned up, yielded a moſt offenſive ſmell, though not of the ſulphur kind. The land was frequently ploughed and harrowed, even to ſix or ſeven times, the inflammable ſubſtances ſet on fire, and the aſhes ſpread on the ſurface. After all theſe operations, which were alſo repeated in 1795, the ground became conſiderably depreſſed and ſo conſolidated as to admit of carts with narrow wheels, loaded with a ton of clay, to paſs over it with great eaſe. On the ſides of the drains, large quantities of yellow ſea ſalt may be collected, and which were

produced

produced by the evaporation of its fluid parts.

In the ſpring of 1794, four acres of oſiers were planted, after the ground had been thrown up into ridges; but the large quantity of ſea-ſalt deſtroyed the whole, except a few which grew on the higher ground in great luxuriancy. The oſiers at firſt put forth fine ſhoots; but as ſoon as their tender roots abſorbed the ſaline particles in the ſoil, they died immediately. Potatoes were alſo planted in large quantities the ſame ſeaſon; but moſt of them, particularly in the low places, where they never vegetated, ſhared the ſame fate.

On enquiry I find that thoſe farmers who lay large quantities on their piles (heaps) of manure, experience the ſame loſs on theſe ſpots for two or three years afterwards; and then the ground aſſumes the richeſt ſtate of vegetation. In the ſpring of 1795, after the ſurface was covered with large quantities of clay, ſeveral acres were ſown with oats, ſome of which produced very good crops, particularly in thoſe places where the ma-

rine

rine acid was diminiſhed. Turneps and potatoes alſo grew well.

At preſent, the *poa trivialis* grows naturally in the greateſt luxuriancy on every part where the ſaline particles are not in too large a quantity: the appearance of this graſs is a ſure indication of the ſoil having parted with a large proportion of the ſalt. Several ſorts of cultivated graſſes have been tried in ſmall quantities, as rye-graſs, trefoil, clover, and meadow fox-tail *(alopecurus pratenſis)*, which thrive with great luxuriancy; chicory *(cycorium intybus)* has been ſown, and grows, but does not thrive well, moſt probably from the ſalt.

It is ſurpriſing to ſee the effects of frequent ploughing, &c. on this kind of ſoil, which, though at firſt only a congeries of roots and light ſubſtances, has, in a year or two, by ſuch practice, aſſumed an earthlike appearance; and, with the addition of clay, lime, ſmall quantities of manure, particularly of animal oil, and frequent heavy rolling, is likely to become, from the moſt uſeleſs ſpot, the moſt productive land for paſture, to

which only it ſhould be applied.—In order to conſolidate the ſoil more perfectly, ſo that the earthy particles may embrace the roots of the graſſes, and retain their proper moiſture, on which the luxuriancy of ſuch ſoils in a great meaſure depends, the ſurface is to be frequently compreſſed, by means of a rolling-cart, which may be burdened according to the ſtate of the land, and is a moſt uſeful machine to carry manure on low-lands during wet ſeaſons.

This machine conſiſts of three circular pieces of ſtrong elm, two feet diameter, and each eighteen inches long, through which a ſtrong iron axis is paſſed, ſo as to protrude a few inches on each end beyond the rollers; after all, allowing an inch between each piece, for the conveniency of turning round. On the projecting part of the axis, a fixed frame-work is placed to ſupport the cart, which may be loaded to any degree, and employed ſimply as a roller, or to carry manure, &c. on land where common wheels cannot be admitted.

Every

Every Meadow in this improved ſpot can be watered with much eaſe, by means of the river cloſe to the embankment, and which will be employed for that purpoſe, when paſture is introduced throughout the whole.

Marſh Lands in general will admit of the greateſt improvement, by the following mode of treatment:

Firſt—By a mechanical arrangement and change of its different parts, as by frequent ploughing, harrowing, and burning.

Secondly—By the addition of heavy ſubſtances, as marle, clay, gravel, &c.

Thirdly—By ſuch ſubſtances as act chemically, and bring the inert vegetable matter into action, as lime, chalk, alkaline ſalts, &c.

Fourthly—By manures, particularly thoſe which contain a large quantity of animal oil or mucilage, as putrid fiſh, ſea-wrack, ſtable-dung, &c.; for Marſh Land in general ſeldom contains any animal ſubſtance, which, in great

great meaſure, is the grand conſtituent part of a rich ſoil.

Fifthly—By compreſſion, with rolling-carts, cattle, &c.

Sixthly—By watering.

The Sandy and Croft Soils adjoining to the Marſh have been cultivated, and produced this ſummer very excellent crops of Potatoes, Turneps, Barley, Oats, Buck-wheat, and Tares.

RICHARD MOYLE.

October 16, 1795.

An Account of the Expences of draining and recovering thirty-ſix Acres of Marſh Land from the Sea, belonging to Richard Moyle, *of Marazion in Cornwall, performed in* 1793.

	£.	s.	d.
To timber for the pipes, 174 yards in length, 9 inches diameter within —	18	10	0
Carriage of ditto — —	0	15	0
Carpenters, for ſawing balk, and making pipes with valves, nails, &c. —	10	9	2
Smith for iron bolts to ſecure the pipes to the rocks, gratings, &c. —	2	10	0
Carried forward	32	4	2

To

	£.	s.	d.
Brought forward	32	4	2
To labourers for throwing open the ſand from 1 to 24 feet deep, and fixing 174 yards of pipe, from the 11th of May to the 15th of June, 1793 —	44	2	4
2,412 yards of open drains, 3 feet deep, 5 feet wide at the ſurface, and 2½ feet at the bottom, at 2½d. per yard —	25	7	6
Repairing and clearing the ſame —	6	18	3
765 yards of croft trench, at 5d. per yard	15	19	7
1175 yards of embankment, to keep off the ſea, 5 feet high and 6 feet thick, at 6d. per yard — —	29	7	6
Repairing the ſame at different times	8	13	1
Flood-gates to keep back the ſea at ſpring-tides, iron-work, &c. —	2	2	0
Total expence of draining 36 acres of Marſh Land, and keeping it dry	164	9	5
Or, per acre — — —	4	11	4⅗

An Account of the average Expence of cultivating and improving a Statute Acre of Marſh or Peat Land.

	£.	s.	d.
To paring the ſurface — —	1	17	4
Drying, gathering, and burning the turfs	0	10	6
Spreading aſhes — — —	0	2	0
Six ploughings, at 10s. — —	3	0	0
Carried forward	5	9	4

To

	£.	s.	d.
Brought forward	5	9	4
Five harrowings with rolling, at 5s.	1	5	0
Horſe-raking and burning roots, &c. three times, at 2s. 6d. — —	0	7	6
Spreading aſhes three times, at 1s. —	0	3	0
200 tons of clay, paid for raiſing, at 1½d.	1	5	0
Filling and carting the ſame, at 3½d.	2	18	4
Spreading ditto — —	0	3	0
40 buſhels of lime (mixed with 240 buſhels of peat), at 9d. —	1	10	0
Carting and ſpreading the ſame —	0	3	0
40 cart-loads of dung, at 1s. 6d. —	3	0	0
Carting and ſpreading the ſame —	0	12	0
Earthing up ridges with a double-mould board plough, to keep it dry during winter — — —	0	2	6
Graſs ſeeds of different ſorts, with harrowing and rolling —	0	12	0
Expence of cultivating per acre	17	10	8
Expence of draining per acre	4	11	4½
Total expence of improvement per acre	22	2	0½

Thirty-ſix acres, at £22: 6s. 2½d. per acre, is £795 : 13s. 6d. —the amount of all the Expences to make the Marſh Paſture Land.

WE certify, that the ſpot of land near Marazion, in the county of Cornwall, called the Marſh or Bog, which was drained, in 1793, by Mr. Richard Moyle, of

of the ſaid place, has been covered, from time immemorial, with ſeveral feet of water, collected from ſprings and ſtreams from the higher lands, and from the regular overflowing of the ſea at ſpring tides. The inhabitants of the villages around this ſtagnant water were formerly viſited with agues every year, which now are ſeldom heard of. We have paſſed over this Marſh in a boat, during winter, in queſt of game, as footing in moſt parts of it was unſafe. This land was formerly of no value, but rather an injury to the tenant, from the frequent loſs of his cattle, which at times have been ſmothered in it, and its ſpontaneous produce only ruſhes and goſs. No attempt was ever before made to remove the ſurface water, from the apparent impoſſibility of draining land under the level of the ſea; but it is with much ſatisfaction that we can certify, of this Marſh being now moſt completely drained, by means of a ſquare wooden pipe, nine inches diameter, and one hundred and ſeventy-four yards long, paſſing from a reſervoir in the Marſh ſix feet under

its ſurface, through a high embankment of ſand, in ſome places twenty-four feet deep, to that part of the ſhore where the tide approaches at half-ebb, and which, at ſpring-tides, is covered with above ten feet of water.

The ſea is prevented from getting into the ſaid pipe by means of a valve at its end, which ſhuts at the approach of the tide, and again opens at its return, ſo as to permit the water, collected in the reſervoir during that time, to paſs off with eaſe. The whole Marſh is ſurrounded with a ſtrong embankment, to keep out the ſea and the freſh-water. The land is divided into regular fields, by means of drains or trenches, as expreſſed in the plan ſent, ſufficient for the uſe and occupation of a tenant. Several acres of the land have been frequently ploughed, harrowed, and burned; and, being now completely pulveriſed, aſſumes the appearance of ſoil. Large quantities of clay have been carried and laid on its ſurface, by means of carts, which paſs over

it with as much eaſe as on the firmeſt lay ground. Crops of Oats, Potatoes, and Turneps, have ſucceeded very well this ſeaſon, except on ſome of its loweſt parts, where the ſaline particles depoſited by the ſea, are ſtill in too large a quantity for vegetation to take place. Graſs ſeems to thrive with great luxuriancy; and the whole promiſes to become, in a few years, from the great labour and expence of manure, clay, lime, &c. beſtowed on it by Mr. Moyle, a valuable ſpot of paſture-land. The croft and ſandy ſoil adjoining to the Marſh, which were never before cultivated, have produced good crops of Barley, Oats, Potatoes, Turneps, Buckwheat, and Tares.

This ſingular mode of drainage ſeems to be quite new, as far as we know, or ever heard of, and which was never ſuggeſted for this purpoſe, till put in execution by Mr. Moyle; and which is the only plan that could poſſibly drain this ſpot of land ſo much under the level of ſpring-tides, and which may be applied with great advantage

to

to Low-lands, ſituated in ſimilar circumſtances, ſo as to recover them from the ſea.

RICHARD JOHN, Ludgvan, near Marazion.

JOHN JAMES, Marazion.

October 16, 1795.

WE, the underſigned, do hereby certify, that the eaſtern part of a tract of land, called the Marſh, lying between the towns of Penzance and Marazion, and ſituated near the ſea, ſo as uſually to be overflown at ſpring-tides, was completely drained during the ſummer of 1793, by Mr. Richard Moyle, of Marazion.

The drainage was effected by the introduction of a ſtrong wooden tube, at the level of half-ebb, through a bank of ſand and gravel, which defends the Marſh from the immediate action of the ſea, for a great part of its length. Reſervoirs are conſtructed for containing the water, when the ſea riſes above the tube; and a valve, at the further extremity, effectually prevents the entrance

of any ſalt-water. The tube enters the Marſh at about ſix feet under its ſurface, from whence drains are conducted to the different parts, forming, with the embankment againſt the river and ſea, a work of conſiderable labour and expence. In its former ſtate, the land was of very little value, producing ſcarcely any graſſes, but abounding in ruſhes, reeds, &c. It is now perfectly drained; a large part of the ſurface has been pared and burnt; ſeveral acres have been completely pulveriſed, by repeated ploughings, rollings, and harrowings; and large quantities of clay have been added to the ſoil. The chief obſtacle to its immediately becoming good land, ſeems to conſiſt in the too large portion of ſea-ſalt remaining in the ground, ſince the more elevated ſpots have already afforded favourable ſpecimens of Corn and Potatoes, whilſt the drains, conveying freſh water, abound with vigorous graſſes, principally Poas. It is propoſed to get rid of part of the ſalt by flooding, and to counteract the remainder by animal and vegetable recrements and lime; this

this laſt will be calcined by peat, found in great abundance in ſome parts of the newly-drained land, and which promiſes, as an article of fuel, very materially to benefit the neighbourhood.

DAVIES GIDDY, F. R. S.
of St. Erth, Marazion.

HENRY WILLYAMS, Clerk,
St. Erth, Marazion.

October 14, 1795.

THIS is to certify, that I meaſured a piece of land in the pariſh of Ludgvan, near this place, called the Marſh, which was formerly covered with water, but now completely drained by Mr. Richard Moyle, and become ſo firm as to admit of heavy-loaded carts paſſing over it with great eaſe. The whole is divided, as in the plan, into regular fields, by means of open drains, fit for the uſe and occupation of a tenant, and ſurrounded, on the ſea-ſide, with a ſtrong embankment of turf, about five feet high and ſix feet wide; and, on the land-ſide, with a large open drain to

carry off the water from the higher lands, ſo as to render the eſtate completely ſecure from inundation.

The meaſurement of the adjoining high lands, conſiſting of croft and ſandy ſoil, which were never before cultivated, is alſo annexed.

	Acres.	Roods.	Poles.
The Marſh contains —	35	3	35
The Croft — —	10	1	20
The Sandy Soil — —	17	0	0
	63	1	15

	Yards.
The Embankment —	1175
The Drains — —	2412
The Croft-drain —	765
The Draining-pipe —	174

JOHN COCK,
School-maſter, Marazion.

October 12, 1795.

Several

Several Claims for the Premium offered for DRAINING LAND, being the GOLD MEDAL or THIRTY GUINEAS, were this Seſſion received by the Society; and the Premium adjudged to Mr. JOHN CROCKITT, of Woodford-Grange, near Wolverhampton, who made choice of the Pecuniary Reward. His original Papers, with a Sketch of the Drains, are reſerved in the Society's Collection.

SIR,

I SHALL be obliged to you to lay before the Society for the Encouragement of Arts, Manufactures, and Commerce, the following particulars on a ſubject, which I believe comes under their plan of general improvement.

Being in poſſeſſion of a valley containing thirty-ſix acres, conſiſting of wet peat intermixed with quickſands, the underſtratum gravel, varying in its depth from three to eight

feet, I determined to try ſome experiments towards improving it. I proceeded to obtain a fall by a main drain, three quarters of a mile below the land I intended to improve. In carrying up the valley the maſter drains, I found it neceſſary frequently to leave the work for a week or longer, to carry off the top-water; and then take off ten or twelve inches at a time only. Two years attention enabled me to complete them, by deepening at ſeveral times to the average of ſix feet, with a proportionable fall. I then proceeded to ſtrip the remainder of the ſurface of its incumbrances, conſiſting of ſome very ordinary alders, and an immenſe quantity of what is here called haſſocks, being tufts of cloſe-matted roots of the ſedge kind, riſing to the height of four or five feet above the ſurface, with blades of rough graſs hanging to the ground each way. The whole valley is bounded by a water-courſe (which I have deepened) on the one ſide, and a cut to obtain a head for the uſe of an iron-work on the other. Here I

muſt obſerve, we had two leakages to encounter, this cut being raiſed from four to ſix yards perpendicular above the land improved; the natural conſequence of a valley parallel, with a bank of light gravel and ſand. Our greateſt breadth is not more than one hundred and forty yards, and in general nearly level.

I proceeded to cut my carriers and catch-drains four feet deep, forming oblong ſquares, eight by fourteen or ſixteen yards, frequently nearer; ſometimes bottoming the peat, at others not; and often found it neceſſary to leave them open for two or three months, and join the communication at every angle. The materials uſed are ſome alder rods, to prevent the bottom of the drains from ſinking, which often happens where it is not expected, and is my reaſon for giving it every draught in my power: two parallel rows of ſtones, a ſecond row upon them, then a third; making a body of from fifteen to eighteen inches deep at leaſt, excluſive of the covering,

which

which is formed ſubſtantially by the haſſocks quartered. After ſtripping them of their ſedges, ſo as to fit cloſe, I level the ſurface, dreſs it with lime and other compoſt, and ſeed it.

As we have water ſufficient to flood the whole, I had in view the advantage the farm would receive from the great quantity of manure annually procured for it, by the improvement, that is, the produce of the valley conſumed upon it, and no return required. I have done this year two thouſand one hundred and twenty-five yards upon four acres and an half, excluſive of the maſter-drains: the quantity of water emitted is twenty hogſheads per minute. Eſtimating this by that done two years ago, I conceive its future value twenty-five or thirty ſhillings an acre per annum: its former, as valued by Mr. Biſhton, of Kilſal, four years ago, was two ſhillings and ſixpence.

Such, Sir, were, for ages, the ſituation of Woodford Moors, without being of ſervice, often

often detrimental, if cattle, allured by the verdure of the creſs-beds, ventured to go upon them, as we had them to draw out again, injured or ſmothered. If my labour is not beneath the notice of the Society, I humbly beg leave to offer myſelf a candidate for the premium offered for ſuch improvement. If I have not literally complied with the terms directed, it was becauſe I conceived the laying ſo large a number of drains far more likely, by aſſiſting each other, to be laſting, than any other method I have yet heard of, where fewer communications were made; and I believe I have made twenty-five acres of land more than ten times its original value.

I remain, SIR,

Your obedient humble ſervant,

JOHN CROCKITT.

Woodford Grange,
near Wolverhampton,
December 30, 1795.

Mr. MORE.

Average

Average Expence per Acre, excluſive of the Maſter-Drains.

	£.	s.	d.
450 yards of Covered Drains, at 1½d.	2	16	3
35 loads of Stone, Carriage, &c.	3	10	0
Grubbing-up the Haſſocks, preparing, &c.	0	12	0
Levelling the Surface	0	15	0
Nine quarters of Lime, Carriage, and Spreading	2	2	0
	£.9	15	3

WE are acquainted with the land above-mentioned: before the improvement, it was a moraſs, wet, ſpringy, and impaſſable; and it is now dry. We believe the fore-mentioned ſtatement to be true; and that the land is rendered above ten times its former value.

J. BEVAN, Miniſter of Tryſull.

THOMAS BARNESLEY, Churchwarden,
JOS. HIGGS, Overſeer of the Poor,
} of Tryſull.

SIR,

SIR,

IN conſequence of a requeſt from Mr. John Crockitt, who occupies a farm belonging to me, ſituated at Woodford Grange, in this county, I have examined the part of it called Woodford Bogs, and find that which has been laſt year improved, ſufficiently drained to bear any ſort of cattle. I had previouſly examined the ſtatement ſent to the Society, and have every reaſon to believe it to be perfectly correct, and the Certificates to be ſigned by proper and reſpectable perſons reſiding in the neighbourhood. The expence incurred to procure a fall, and the difficulty ariſing in the execution, will, I hope, render Mr. Crockitt worthy of the attention of the Society; and the more ſo, as he intends purſuing his improvements, on a ſituation hitherto unfit for all agricultural purpoſes. I am, SIR,

Your obliged humble ſervant,

JOHN WROTTESLEY.

Wrotteſley,
near Wolverhampton,
March 2, 1796.

Mr. MORE. The

The Thanks of the Society were this Seſſion given to Mr. JOHN MIDDLETON, of Paradiſe-Row, Lambeth, for the following Paper on MAKING HAY, with Drawings annexed thereto, as ſhewn in the Plate annexed.

HAVING obſerved in the courſe of my reading, that ſomewhere in the North of England, it is not altogether uncommon to ſee ſome of the inhabitants dragging their hay together, without the aſſiſtance of either cart, waggon, or ſledge; and having myſelf experienced that much time, and, in general, the beſt workmen, are employed in loading the carts in a hay field, particularly at a time when the price of labour is high, and hands not always to be procured; I was induced, from theſe conſiderations, to turn my thoughts to the ſubject; and, in conſequence, ſketched the lines for a carpenter to make me the followig machine, for the above purpoſe; and it performed the work ſo well, that I uſed it all laſt hay-time with great advantage.

It

It is drawn by four horſes, in pairs, with a boy to manage and drive each pair. On ſmooth ground theſe alone were ſufficient; but, where the machine was to be drawn acroſs ridges and furrows, it was found neceſſary to have a man to attend with a fork in his hand, which he ſhould uſe, as often as the machine ſhews a tendency to ſlide over the ſtill row of Hay, by thruſting the prongs into it to the greateſt depth that can be done, without ſuffering the points to touch the ground, and nearly cloſe to the Hay then in motion by the machine: the moving-hay advances to the fork, and drives forward the hay ſo held by its prongs, and with it all that part of the row; and, it being once put in motion, the machine keeps it ſo. The man ſhould keep walking briſkly forwards before the machine, and put the fork into the ſtill-hay, until the machine gets hold of it, as often as may be neceſſary, which will be particularly ſo in paſſing every furrow; but in level fields this will ſeldom happen; though I found that, even where the ridges were a little unfavourable, as in the

the caſe of being too round, the machine was prevented from being ſtopped or impeded by breaking the row of Hay at every twenty or forty yards diſtance.

I ſhall endeavour to make the whole more clearly underſtood, by the following ſketches and explanations, to which I beg leave to refer you; and ſhall now proceed to obſerve on what I conceive to be its particular merits.

In caſes where the Hay can, without inconvenience, be ſtacked in the field, it will entirely ſuperſede the uſe of every ſort of carriage, as it may be made to draw all the Hay in the field to the ſtack; and it may, with equal facility, be made to draw the Hay produced on any number of fields to one place, provided the gateways are made ſufficiently wide to admit the machines paſſing through; namely, about fifteen feet: and conſequently all the Hay of any farm might thus be drawn to the ſtack-yard. But it appears to be adviſable, as a matter of prudence, to confine its uſe to a graſs ſurface, as in paſſing over gravel roads, gateways, &c.

&c. it would probably pick up ſome dirt, and other extraneous matter, which might be injurious to the Hay.

It will be found uſeful in very ſcorching hot weather, eſpecially when hands are ſcarce, in dragging the Hay together the moment it is ſufficiently made, and thereby preventing (what frequently happens) its being too much dried. In catching or ſhowery weather it will be of ſtill more ſervice, as in the caſe of a field of Hay, more or leſs, not being quite fit to carry to the ſtack, and ſymptoms of approaching rain appearing, the whole may generally be ſwept into heaps, containing as much as the horſes can drag at twice, by fetching the ends of each row to the middle, or, by drawing two or more rows into one heap, and employing every hand in making it into large cocks (or pikes), containing a ton or two in each (proportioning the ſize to the dryneſs of the Hay): thus the whole may frequently be ſecured before the rain falls; and, if properly made, they will turn all the rain that may fall. Even if the weather ſhould prove wet

for a week or more, theſe cocks will be found to have ſuſtained no very material damage, except that the outſides will be a little ſtained or diſcoloured by the rain, and the bottoms by damps ariſing from the ground; the latter will always happen when the cocks are ſuffered to ſtand a fortnight or more in the field, but the former will only happen in caſe of uncommonly heavy or long-continued rains.

In caſes where the Hay is ſufficiently made to bear ſtacking, and there is an appearance of rain, it may be ſpeedily dragged to one place near the middle of the field, and all hands employed in making the ſtack, which may immediately be ſecured by putting a cloth over the top; and even where a cloth is not at hand, only let it be made ſufficiently high in the middle, hard trod, and well raked down on the outſide, and it will be almoſt equally ſecure.

I experienced its uſe in all theſe caſes laſt ſummer, and am of opinion, that when the boys are agile, and the horſes tractable, and uſed

uſed to the work, ten acres of Hay may be thus ſecured in little more than an hour.

I am, SIR,

Your very humble ſervant,

JOHN MIDDLETON.

Paradiſe-Row, Lambeth,
November 26, 1795.

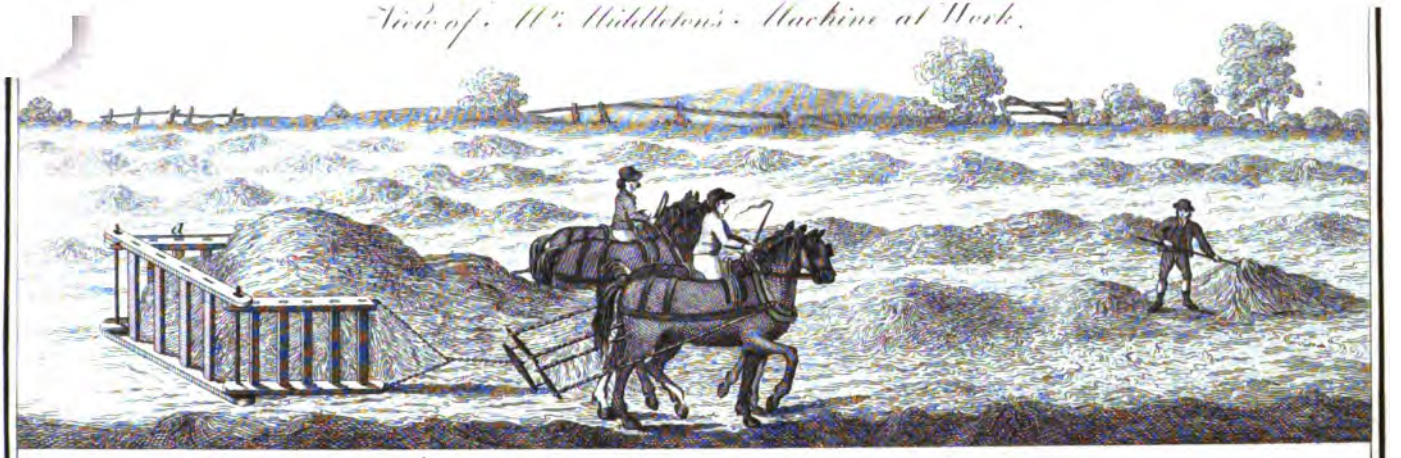
Mr. MORE.

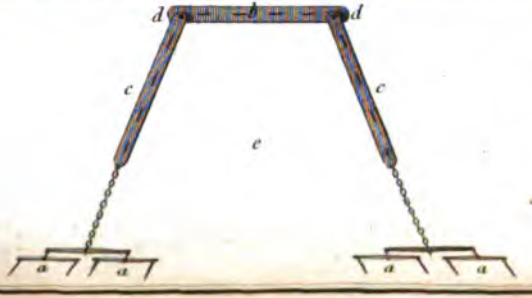
Explanation of the Machine and the manner of uſing it, as ſhewn in the Plate.

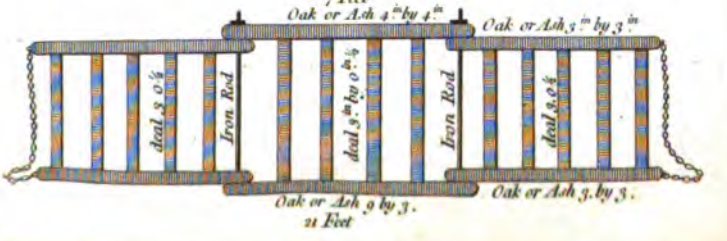
IT will firſt be neceſſary that the Hay ſhould be put into rows, as is univerſally done before the loading of carts, waggons, or ſledges; then, in order to ſweep the Hay together with greater facility, order a man with a fork to go and turn the end of a row up, two or three yards, ſo as to form a ſort of heap, and then walk on ten, twenty, or forty paces, and break the row, by turning the Hay forward into another ſimilar heap; and let him go on and repeat this operation to the

end of the row, which he ſhould do as faſt as he can walk; then order the boy who has the management of that pair of horſes, to whom the empty machine is attached, to draw it acroſs the end of the row; and, the moment the centre of the machine is at the middle of the row, let him turn his horſes ſhort round, to within a yard or two of the Hay, ſo as to be in a proper poſition to ſet off: the other boy muſt inſtantly place his horſes on the oppoſite ſide of the row, and hook the chain of his ſplinter-bar to the machine, pulling the gate or ſide of the machine round, ſo as it were to claſp the Hay as at *(a)*. The boys being mounted, and all now ready to ſtart, let them draw ſlowly on for the firſt twenty or forty yards; they may then, if the buſineſs requires diſpatch, increaſe their pace, urging the horſes into their faſteſt walk, and from that into a ſlow trot, until as much Hay is collected as the horſes can draw: then, unhooking one end, let the horſes at the other, turn from the Hay, and draw out the machine from behind it: then trot away to the end of the next row, and repeat the proceſs, taking care

View of Mr. Middleton's Machine at Work.







care to keep the horſes on each ſide of the Hay, at equal diſtances from the row, and opoſite to each other. When the Machine is loaded, and the intention is to draw the load to a diſtant place, the four horſes cannot be kept too near together.

The Elevation of the Machine, as it appears when drawn by one end, and empty, is ſhewn in the lower part of the Plate, where the ſcantlings of the ſeveral parts of the Machine are marked.

The Plan of the Machine, when in the action of drawing the hay, is alſo ſhewn in the lower part of the Plate, and lettered as follows.

a. a. a. a. The places occupied by the horſes, when drawing (though in many caſes one horſe on each ſide would be ſufficient).

b. The back, or principal part of the Machine.

c. c. The ſides, or gates of the Machine, which ſwing on the iron rods fixed in the back at *d. d.*

e. The row of Hay.

A Bounty of FIFTEEN GUINEAS was this Seſſion adjudged to Mr. EDWARD KNIGHT, of Great Bardfield, Eſſex, for his NEW-CONSTRUCTED HARROW; a Plate of which is annexed, and a Model reſerved in the Society's Repoſitory.

FINDING, in the courſe of my buſineſs in huſbandry, many inconveniences attending the common mode of harrowing, and that it fatigued my horſes much more than the work of ploughing, any plan that ſhould occur to me for their relief, as well as for obviating every other difficulty, I flattered myſelf would be an object eſſentially ſerviceable. It muſt be a remark diſcernable to every perſon, who will pay the leaſt attention, that the common Harrow is almoſt a dead weight after the horſes; the irregular and uneven motions cauſe inceſſant checks, which the horſes muſt inevitably feel the unpleaſant effects of, both from their collars as well as the traces. I likewiſe frequently experienced ſome trouble by the Harrows

Harrows being clogged up, in conſequence of too great a weight on the fore-teeth.

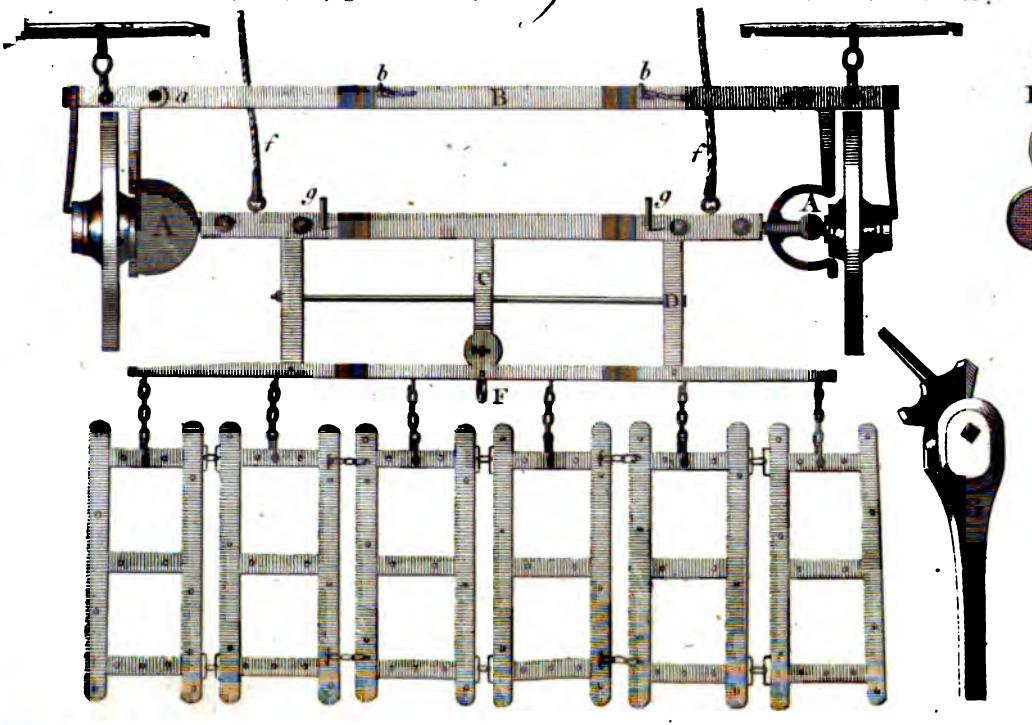
In order to remedy theſe, as well as many other inconveniences, I was induced to try a pair of wheels with the axle-tree entire, which I found anſwered the purpoſe with reſpect to the horſes, as the Harrows worked much eaſier; they prevented the too great ſtreſs on the fore part, which of courſe was not ſo liable to be choaked up, by collecting every impediment that might fall in the way; and the workman found little or no difficulty in keeping his Harrow clean, a circumſtance difficult to be done with the common Harrow. Though I was perfectly ſatisfied that this plan had a material effect, by being much eaſier to the horſes, as I have before obſerved, ſtill I met with great inconvenience from the axle-tree being entire; it required a conſiderable ſcope of ground at every turning. I likewiſe obſerved, that if either of the horſes was more forward than the other, or not perfectly ſteady in his drawing, the wheel left the furrow proportionably, and loſt its ſtrait

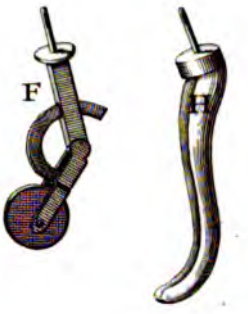
direction: another objection I made to the axle-tree being entire, was that it greatly incommoded me in paſſing through the gate-ways, when I wiſhed to convey my Harrows from one field to another.

In order to remove theſe difficulties, I have contrived two joints, A A, in the axle-tree, one of which, in the print, is covered, as when the Harrows are at work; the other uncovered, to ſhew the conſtruction of the joint; and two joints, *a a*, in the front of the bar; by means of which I find, by repeated trials, that the pliability of the tree, and likewiſe of the bar, humours the wheels and keeps them in their proper directions in the furrow, and, requiring very little ſcope of ground, the turnings are rendered very convenient and eaſy. The objection I ſtarted with reſpect to the removing the Harrows, as occaſion required, I find now perfectly done away.

If, in the courſe of working the land, a farmer varies in the breadth of his furrows, I have contrived, in order to make the Harrow narrower, that part of the bar, B, which

Mr. Edward Knight's new Constructed Harrow.





which is faſtened by two pins, *b b*, to be taken off, when requiſite; part of the axle-tree, and part of the hind bar, C, which are faſtened likewiſe by the iron-bolt, D, to be alſo removed; and the remaining outward parts to be joined and faſtened by one of the two pins in the bar, and by a ſhorter bolt, *d*, intended for the axle-tree and hind bar.

If the farmer ſhould work two horſes, which are unequal in height, the horizontal direction or evenneſs of the joints may be deſtroyed in ſome degree; and, to remedy and ſupply this deficiency in the horſes, I have made a whipple-tree, E, to be heightened or lowered, by means of notches, *e e*, to which it is connected by a ring. In light barley-lands, when you accommodate your Harrow for one horſe, by narrowing it as before directed, there are two ſtrings conveyed by two rings from the axle-tree, through two loops, *f f*, under the front bar. The wheel, F, under the hind bar, which is alſo ſhewn enlarged in the Print, at F, will ſupport the bar, and, by this aſſiſtance,

the Harrow is conveyed to the field on the axle-tree bar, as a ſubſtitute for a ſledge: there are alſo two wooden pegs, *g g*, by which the Harrows, when turned upon the carriage, are ſecured.

Should it be objected by ſome, that the Harrow will prove expenſive, on account of the iron, an axle-tree and joints may be readily conſtructed in wood, upon the ſame principles, as ſhewn in the Plate at G; though, for my own part, I give much the preference to iron. If the wheel under the hind bar ſhould not be adopted, there is a ſlider, H, which works with a pin, and, when not wanted, is turned and faſtened under the axle-tree.

EDWARD KNIGHT,

Great Baraſield,
near Braintree, Eſſex.

To the Society for the Encouragement of Arts, Manufactures, and Commerce.

WE, the underſigned, occupiers of lands and others, in the neighbourhood of Edward Knight, have ſeen the Harrow

Harrow at work, as repreſented in the Plate, and find it anſwer every expectation. We find it very convenient in the turnings. We are perfectly ſatisfied that it is much eaſier to the horſes; and the additional improvement of the joints gives a ſteadineſs in the furrow, whenever the horſes prove untractable: the wheels are likewiſe the means of the horſes taking an equal ſhare in the draught. We beg further to expreſs our good opinion of John Knight, Edward Knight's workman, as a perſon well ſkilled in the practical part of huſbandry; and have taken the liberty of incloſing his certificate.

Great Bardfield, Eſſex.

WM. PHILLIPS, Vicar.

W. POLLETT, ſen.
WM. POLLETT, jun.
THO. SMITH,
G. SMITH, jun.
JOS. SMITH,
G. HICKS,
THO. KNIGHT.

I, JOHN KNIGHT, having conſtantly uſed the Harrow, as repreſented by Edward Knight's model, do find it anſwer the intended purpoſe, and that without exception, in my opinion; and I am thoroughly convinced, that, by this improvement, two horſes will in moſt reſpects anſwer the purpoſe of three.

JOHN KNIGHT.

Great Bardfield, Nov. 9, 1795.

FRIEND MORE,

AGREEABLY to thy requeſt, at *foot* is the price (or thereabouts) of a ſet of Harrows and carriage, according to the model ſent to the Society for the Encouragement of Arts, &c. and may inform the Society, the Harrows have been uſed on my farm more than twelve months. I find them particularly uſeful this wet ſeed-time, as two horſes do the work of three, and always go in the furrow, otherwiſe muſt go on the middle of what we call the ſtech; others call them broad lands. I

alſo

alſo find them (that is the wheels with a ſhort axle-tree) very uſeful with my crab-harrow, more than a horſe's draught difference; and remain

Thy friend,

EDWARD KNIGHT.

	£.	s.	d.
The carriage for the Harrows —	1	1	0
Two Whipple-trees — —	0	1	0
56lb. of hammered Iron, at 6d. or 60lb. caſt ditto, at 2d. (10s.)	1	8	0
A pair of Wheels with Iron-work, or a pair of ſecond-hand ditto, 12s.	2	3	0
	4	13	0

	£.	s.	d.
Or, with ſecond-hand Wheels and Caſt-iron	2	4	0
Three pair of Harrows complete —	2	0	0

If the Frame is made to take ſhorter, as repreſented in the model, 9s. extra.

P. S. Although my Harrows anſwer every purpoſe, as deſcribed before, and repreſented by my model; yet I flatter myſelf I have diſcovered an improvement, which I beg leave to lay before the Society.

Experience

Experience teaches me, it would be very uſeful to heighten or lower the Harrows occaſionally, particularly on broad lands riſing in the middle, where of courſe the middle Harrow takes moſt hold, and generally requires the leaſt: this is eaſily effected, by fixing an iron with notches (like thoſe on the fore bar, by which the whipple-trees are ſupported) on the hind bar, inſtead of the hooks, and the hooks put on thoſe irons.

The

The GOLD MEDAL was this Seſſion voted to THOMAS SKIP DYOT BUCKNALL, Eſq. for his extenſion of Obſervations on ORCHARDING, as communicated in the following Paper.

SIR,

IN this year's Paper I deſire to introduce to the Society ſome valuable additions to the ſcience of Orcharding:

Firſt—The removing trees of the age of twenty years or upwards, to ſupply any deficiencies; by which means the rows in the plantations will be fully kept up, and the Orchard remain perfect, with trees of the ſame age and ſort as thoſe which have decayed or died.

Secondly—The engrafting of new bark upon trees that have beeen injured by cattle, carts, &c. and thus trees kept in a perfect ſtate, which otherways would have died, or ſoon gone to decay. But I wiſh previouſly to impreſs on the minds of the Society, that, in the whole extenſive Orchards throughout

throughout the kingdom, moſt of the ſtandard fruit-trees may be prevented becoming rotten, hollow, or much decayed, until, by great length of time, a dryneſs, want of energy, or by their own weight, they fall into actual diſſolution; and as it is allowed that large trees yield the moſt productive crops, either individually, or per acre, attention ſhould be given to run the trees to ſize; for at preſent there is no competent idea to what extent trees may be induced to grow, by a ſuitable manure and proper management.

The baneful effects of canker may be nearly baniſhed from the more delicate fruit-trees, and the oozing of gum in great meaſure prevented in the different ſpecies of the cherry, and other ſtone fruits.

In the firſt Paper I did myſelf the honour of preſenting to the Society, I repreſented that "pruning is an important article, "with regard to the health of trees, and "their bearing; and, if judiciouſly done, "they will come into bearing ſooner, and "continue in vigour for nearly double their

"common

" common age."—See Vol. XI, page 12. That attentive care which chooſes the proper ſoil; places the trees at due diſtances, according to their natural growth; keeps the branches free and open, that the ſun may paſs over the ground; all being perfectly pruned and regularly cleaned, ſo that the tree may become healthy, round and large, and carefully apply the manure and culture moſt proper for fertilizing the lands appropriated to Orcharding: when theſe advantages ſhall be really united, it may reaſonably be expected that the fruits muſt be larger, finer coloured, freer from ſpecks, and of a richer quality; whence ſuch fruits muſt have a pre-eminence in the markets; or, if originally intended to be thrown into the mill, the cider will be more in quantity, ſtronger, and higher flavoured; proofs of which may eaſily be brought. As I apprehend the Orchards and ſtandard fruit gardens of this country may ſoon be eſtimated at ſome hundred thouſand acres, and ſhould expect from the improvements attempted to be introduced, that in ten

years time each acre, on an average, will increaſe by the improved culture to more than one pound per acre in value per annum, I hope it will not be thought arrogant in me to ſay, that I look upon myſelf as being the actual means of benefiting my country to the amount of more than three hundred thouſand pounds a year.

And if Orchardiſts will conſider this poſition to be founded in truth, it will be an incitement to their exertions. The premiums offered by the Society to promote the proper planting and culture of Orchards, it is expected will ſpread emulation among the planters and, (aided by the extenſive improvements of inland navigation, by which fruit and cider may be conveyed from one extremity of the kingdom to the other), the culture of Orchards may be regarded as a national concern.

When pruning ſhall be fully underſtood, and generally practiſed, the benefits reſulting therefrom will appear to be much more the effect of judgment than the reſult of actual labour; for I have often mentioned, among

among my friends, my expectation, when the trees are properly brought into order, the whole ſyſtem will be little other than penknife-pruning, except what may ariſe from accident or neglect. So far from wiſhing to have large limbs wantonly taken from trees, the rule is, "keep the branches "out of the reach of cattle, then let them "follow their natural growth." (Vol. XII, page 211): this would ſoon be verified, if a few proprietors and cottagers conſidered the nature of this buſineſs, and began pruning their own trees from the firſt planting, by way of example. When the cottager comes to prune his maſter's trees, then will each concur in opinion, for it depends more upon the mind than upon the hand; and yet there is no myſtery—the the maſter ſpeaking, the cottager comprehends his directions, and thus the work would go on properly. In Mr. Boulding's Certificate (Vol. XI, page 22) "we were "ſometimes in doubt whether a particular "branch ſhould be taken off or not; the "rule eſtabliſhed was, conſider, will that

" branch be in the way three years hence? " if it will, the ſooner it is off the better."

I have taken much pains to correct prejudice and eſtabliſh a rational culture, and have no doubt but it will become general; yet, I muſt confeſs, I ſhould like to ſee it fully eſtabliſhed in my own time. The whole ſyſtem is grounded on the regular operations of nature in the productions of vegetation: the advantages are fully explained in the reſpective Papers; and, for the mere labourer, there is a ſhort abſtract and inſtructions in Vol. XIII, page 170. I have reconſidered every thought, and find them all concenter in the ſingle word HEALTH.

My chief inducement in writing on the art of Pruning, was to reſcue ſo valuable a branch of Agriculture from neglect, or from the more deſtructive manner in which the work has hitherto been performed. Obſerve in my new ſyſtem, " the trees continue of the ſame ſize " both before and after pruning, and all the " extreme ſhoots keep at the ſame diſtance, " which

" which is an improvement not before " brought into practice." (Vol. XII, page 212).

I have undertaken to produce four apple-trees within the ſame incloſure, each of which ſhall cover ten poles of ground long before they fall into actual decay; and for that purpoſe have meaſured four trees on the north ſide of Sittingbourne, in an orchard belonging to a gentleman at Maidſtone; and, with proper management, there is no doubt but they may be brought to that ſize. As they ſtand cloſe to the road, where they will be under general obſervation, I ſhould think, if a viſible improvement becomes apparent in trees thus marked for public trial, it would counteract the negligent habit of ſtill ſuffering large trees to continue ſo incumbered; theſe trees are of great magnitude, and cannot be leſs than an hundred years old; are in high health; yet much overrun with ſtumps, dead wood, moſs, &c. I remember the ground more than forty years, and think if my ſyſtem had been introduced when that orchard

was firſt planted, there would have been, inſtead of four trees, at leaſt ten times that number, and of equal value. I muſt ſay they are noble trees, and might become beautiful, if that epithet may with propriety be applied to an apple-tree. I have had a long correſpondence with the gentleman, either to purchaſe the Orchard, or to have the liberty of pruning thoſe trees *gratis*; and, under ſuch permiſſion, I have determined not a branch ſhall be touched, but with conſent of the tenant: I muſt not ſay more upon this ſubject until I know the reſult; if I am diſappointed, there are other trees in the neighbourhood of the ſame age, but they are neither ſo healthy, nor ſo well ſuited for my purpoſe.

Several times I have been aſked how much an old tree ought to be pruned?—The proper anſwer would be, if it be very old, and much incumbered, do not let in the cold winds; but, with care, take off the ſtumps, with all the decayed, rotten, and blighted branches, leaving the reſt to the diſcretion of each perſon, who will ſoon ſee how

how much is neceſſary; ſelf-conviction being the beſt ſchool for improvement. The truth is, whoever would form Orchards to produce credit to himſelf and profit to his ſucceſſor, muſt not ſuffer the trees to become old before the operations commence, but determine that pruning, cleaning, and rubbing off the rotten bark, ſhould be begun in the nurſery, and regularly continued to the extremity of old-age; from which method very little wood need be taken off at a time; and, by uſing medication, the wounds will heal, without cauſing any more blemiſhes than the tree was ſubject to at the time the limb was taken off; for it is not the firſt cutting which blemiſhes the tree, but the corroſion, ariſing from neglect.

Let each perſon therefore determine that no ſtandard fruit-tree ſhould be ſuffered to remain incumbered with rotten and decaying branches; for theſe, admitting the water into the tree, and contaminating the balſamic virtues of the ſap, lay the foundation of ſure deſtruction to the tree, and furniſh

niſh to inſects a *nidus* under the rotten bark, in which they depoſit their eggs.

I mentioned to Mr. Fauſſet, in the year 1789, as appears in Vol. XI. p. 12 and 15, that the greater part of the miſchief affecting my trees, aroſe from inſects, vermin, and microſcopic animalculæ, getting under the bark, which has the laſt year been more fully elucidated by William Hampſon, of Dewnap, Eſq. in the Thirteenth Volume of Tranſactions, p. 172, under the article Inſects; and the prevention is there ſo properly pointed out by him, that, in the character of Orchardiſt General, I wiſh ſtrongly to enforce the practice. I have often ſeen whole crops of the more delicate apples deſtroyed by the foliage being eaten off in the ſpring: the hardy fruits are not ſo liable to theſe diſaſters, for the ſtrong health of thoſe trees in a great meaſure ſecures them from ſuch depredations.

Laſt ſummer, in Kent, I had much converſation with ſome very intelligent men, on the ſubject of Orcharding and general Agriculture. A gentleman on the hills

ſhewed

ſhewed me ſome large trees, and aſked my opinion.—I replied, Dō nothing; for you can gain no credit by them, from the energy or active powers of vegetation having been long exhauſted in thoſe trees: but I pointed out ſome young ones where pruning might be happily applied, and he might make a trial on one of the large ones.

At Brambling, I viſited an Orchard at the requeſt of the owner: the trees required more cleaning than pruning, and I requeſted he would be careful to attend the operation himſelf, and his orchard would become more valuable, by the quantity and quality of the fruit. I recommended him to encloſe the ground, which contained about ſix trees, with hurdles, and he might eaſily unite that ſpot with his pig-ſtyes, and ſuffer the hogs to be conſtantly running over that ground; and, from the manure thus obtained, the trees would receive a viſible energy, which would ſoon appear in the growth of thoſe trees, when compared with the others, and that the improvement of the trees was to be the criterion for him

to

to act by; for the freer the trees grow, the more effectually they recover the pruning, by throwing out young wood: and I remarked, that if the Orchard was my own, I would open the gate, without reward, for the drovers to bring in the yearling cattle, which pass the road from October to Midsummer, for three years; and such practice would double the value of the fruit: I mean, to what it will be ten years hence, for the trees are visibly going off, though now they are just in a state to be recovered.

Last year I recommended cleaning by soap-suds (Vol. XIII. p. 168). A gentleman at Wandsworth uses oil, which has a wonderfully good effect. I should think the oil might be applied about a month after the suds. As I am, in large concerns, a friend to cheapness for the bulk of mankind, I imagine any damaged oil would do: oil certainly is beneficial to trees.

These observations are sufficient to shew that I am attentive, and vary the advice, according to the state and value of the trees.

Some

Some gentlemen in my neighbourhood have made very handſome exertions; but I wiſh to bring the improving trees into univerſal practice, and keeping them in bearing to a great age; and would recommend that perſons, for their own ſatisfaction, ſhould ſelect a certain number of trees, according to their fancy, and mark them in pairs, as to their age, freeneſs of growth, and other circumſtances, ſuitable to trial, prune and manure one, and leave the other in the ſtate of nature; but, for experiment, do not prune two trees, ſtanding next to each other, in the ſame year, when the pre-eminence of the practice will ſoon appear:—ſuch a mode is bringing Orcharding to a fair trial; and, if I had been ſo prudent as to have managed my trees alternately, two-thirds of the growers in Eaſt Kent would have acquired the ſcience before this time. It may appear that I argue this ſubject too ſtrongly; but, when we recollect that the Society has been thirty years engaged, and ſhewn moſt aſſiduous and laudable exertions, aided by many high premiums, to aſcertain

the

the comparative advantages of the Drill and Broad-caſt Huſbandry, we muſt ceaſe to wonder that the ſcience of Orcharding has not made greater progreſs.

It is recommended, that the rows of trees ſhould not ſtand north and ſouth, but a point of the compaſs towards the eaſt, as the ſun will then ſhine up the rows ſoon after ten o'clock, which, in the ſpring of the year, will ſerve to diſſipate the vapours collected in the night: theſe vapours ſtunt the fruit in the early ſtages of its growth; and, where the ſhaws are properly attended to, this poſition will beſt enable them to divide and blunt the power of the winds, and prevent blights, and the ſhaw might be a little brought over the ſouth: but, as each ſituation has a predominant wind, this is only hinted to put the planter upon his guard: the ſhaw alſo will greatly protect the fruit from the ſeverity of the autumnal winds, at which ſeaſon half the crop of fruit is thrown from the tree before it is ripe; and the heads at that time of the year being loaded with fruit and leaves, many

trees

trees are actually torn out of the ground, or ſo lacerated as to be ſpoiled, which a proper ſhaw might prevent. Judicious ſhelter ſhould be the firſt object thought of in forming an Orchard on a large ſcale.

Had I been poſſeſſed of ground near my own dwelling, I ſhould ten years ago have planted an extenſive experimental Orchard —it would have given me much pleaſure; but there is no land attainable; and experiments cannot well be conducted at a diſtance, to any great credit, where the only object is to raiſe emulation by way of example.

When I pruned the trees in my Orchards, at Sittingbourne, in the year 1790, they being young, I cut freely, for they were greatly incumbered and decaying, and half the wounds were made by taking off the ſtumps, and cutting down the cankers and gum, as certificates fully prove (Vol. XI. p. 26); and I was certain the trees would be greatly improved by the pruning: but I muſt mention they have not been touched ſince, leſt any perſon who may examine the

the Orchard by way of obſervation, might confound the former and new wounds together.

Let no one be afraid of the expence, for that is trivial; fourpence-halfpenny per tree once in three years would overpay it, after the trees have been brought into order, if the maſter would only take care they are kept clean, and the caſual accidents duly attended to (ſee Vol. XIII, p. 167). According to my ideas, the age of a tree is not to be conſidered; for the judgment muſt be taken from the energy and freeneſs of growth, as many trees are in a more declining ſtate at ſixteen years than others at an hundred. Since I have mentioned comparative age, obſerve, from ſixteen to twenty is a critical time for the delicate fruits: if they continue in health beyond that period, they generally go on well afterwards; and, upon ſome future occaſion, I ſhall introduce Root-pruning.

Were it neceſſary more fully to enforce the practice of pruning, ſuppoſe an order was given, that all peach-trees ſhould remain

main unpruned for five years: from thence be aſſured, there would ſcarcely be a high-flavoured peach in the kingdom, all either ſour or inſipid. The apple or cherry do not require the ſame care the peach does; yet each are well worthy of attention. I obſerved, in Vol. XII. p. 217, "that ſun-"ſhine and ſhade are unalterably the cauſe "of ſweet and ſour fruits."

Thoſe acquainted with the wine-countries know that the natives beſtow much labour in manure, culture, pruning, and more particularly in bringing the grapes to perfect ripeneſs; and I do not ſee why, in Britain, ſome part of that attention ſhould not be given to the apple.

It is proper here to recommend to nurſerymen, to be attentive to their GRAFTS, for more depends upon it than is imagined; as, from the grafts being full, well wooded, clear, and properly choſen, the fruit will be both larger and higher flavoured. Though the ſoil and culture may be the ſame, the health of the wood of the tree is alſo moſt materially affected during the whole time

of

of the tree's exiſtence, by the proper maturity the ſcion was in at the time it was firſt put into the ſtock.

As this is to be my laſt eſſay, I wiſh to ſend it out as perfect as I can, and beg excuſe for the great length. Let any perſon, whoſe mind has, by precept, been turned to philoſophical enquiries, conſider the following ſtatement: when an Orchard has become old and much encumbered, ſo that the trees, from being too thick, totally overſhade the ground, if one of thoſe trees dies, the four next ſurrounding it will each of them throw out their branches to fill up that void ſpace; the ſap of thoſe four trees tending that way by the active influence of the ſun and air, and the other parts of thoſe trees ſtill remaining incumbered, will of conſequence decline in vegetation; for the energy is drawn the contrary way. Theſe things happen every day, but on the unobſerving eye make little impreſſion. This intuitive energy of nature is not confined to vegetation, for it pervades all nature: then why not ſuppoſe, if a part of a tree is de-

cayed, and you take it out, that Nature is capable of filling up the void ſpace: that ſhe is capable, is moſt undoubted, and ſhe will do it too, if there is any energy left, by ſupplying younger and better-bearing wood than that which is taken away.

Where the trees are ſo cloſe and incumbered, that the agricultural vegetation cannot thrive under them, the fruit from ſuch an Orchard will hardly be large and high-flavoured; neither will it keep ſo well.

Laſt autumn, the delicate fruit-trees were much incommoded with a whitiſh mould or mildew, which I have regularly obſerved to take place in what is called muggy weather; this is what lays the firſt foundation of canker; it was very prevalent about ſeven years back. I have long known it to ariſe from animalculæ ſettling on the wounded parts of the tree, and the ſhoots of the preſent year. In Vol. XIII. p. 169, I pointed out the cure, which is rubbing off with the lard medication; and I recommend to have the ſhoots cut at a large bud; for, when they have been thus

affected, there are but few of them will ſtand the cold of the winter: they generally die off about half way up. I have formerly quite removed the canker from ſome nonpareils, which, after three years medication, threw out ſhoots a yard long: this induced me to ſay, that the mercury gave an energy to the plant; I mean, by the mercury curing the diſeaſe, the plant recovered its energy: any one may ſatisfy himſelf that it is animalculæ, by rubbing a little of the mildew between his thumb and fore finger, when the inſects actually break, and produce a matter like the cochineal fly *(coccus mali)*.

Another circumſtance worthy obſervation is, the cuſtom of attempting to check the too great flow of the ſap, particularly in pear-trees, by cutting a circle through the bark, with the intention to make the tree fruitful; much better would it be, by natural means, to lead the ſap regularly through all the branches; the action of the ſun would then properly impel it to the extreme parts of the tree, for ſwelling the buds

buds, and ſupporting the fruit; and this even flow of ſap is what produces fruitfulneſs, and is implied, Vol. XI. p. 13—"The "more the range of branches ſhoot circu-"larly, the more equally will the ſap be "diſtributed, and the better will the tree "bear."

Let me entreat thoſe intereſted in fruit plantations, to unite in eſtabliſhing and exalting the ſcience of Orcharding, to make it one of the handmaids of Commerce: it is certainly the poor man's friend, the rich man's pleaſure, the pride and ornament of the reſpective ſpots attached to each habitation. View the trees in ſpring unfolding and raiſing their beautiful bloſſoms and leaves up to the eye of Heaven, and in autumn gently bending their pliant branches for the induſtrious hand to gather the fruits. Do not wonder that I ſhould ſhew a little enthuſiaſm for the welfare of a ſcience which I have actually created, and from which I have received much ſatisfaction.

The Ancients had their goddeſs Pomona, to whom they paid divine honours, which goddeſs was no other than an ideal ſuperintendency ſuppoſed to preſide over Orchards; which is a moſt convincing proof that they held the culture of fruits in high eſtimation.

Through the whole proceſs I have confined my inſtructions to ſtandard trees; but now ſay, they are equally applicable to fruits in general, even to the hawthorn, whoſe bloſſoms in ſpring, and fruit for the birds in autumn, make it worth ſome attention in parks, and ſuch plantations.

For the full eſtabliſhment of the art, nothing more is neceſſary, than to gain two or three capital land-owners in each diſtrict, who occupy their own eſtates, and influence them to examine the ſyſtem, and follow it, from which much improvement muſt reſult. In every ſcience the principles muſt be underſtood before the practice can become general. I am, SIR,

Your moſt humble ſervant,

T. SKIP DYOT BUCKNALL.

Hampton Court,
Jan. 6, 1796.

Mr. MORE.

The following Account of an Experiment made by Mr. Lake, and the Extract of a Letter from William Fairman, Eſq. will throw great light on the Method of removing large Fruit-Trees, and engrafting new Bark on ſuch Trees as may have been injured by the bark being ſtripped off by ſheep, or any other accident; and it will be ſeen that, in the ſame Letter, Mr. Fairman gives a decided opinion on the appearance of the Fruit-Trees pruned under Mr. Bucknall's immediate inſpection. Alſo, an Account from Sir John Morſhead, Bart.

Removing large Fruit-Trees.

MR. LAKE, of Bapchild, in the year 1790, aſked me if I could help him to remove about ſixty cherry-trees? I did not think his reaſon to alter their ſituation ſufficient to juſtify the expence, and attempted to diſſuade him from it; but he perſiſting, I ſaid, If you will order a ſemi-circular board, ſuch as the bricklayers turn their

arches upon, of three feet ſix inches diameter, in which cut a center, and with a ſmall ſpade dig a trench round the tree below the roots; afterwards cut the ends of the roots with a ſharp knife, and fill up the trench again; the year after thin the head very much, that the wind may have no power over it; and the next year ſo diſpoſe the young ſuckers as to lay the foundation for a handſome head in future; and with theſe precautions you may venture to carry the trees farther than you want: but do not lighten the head the firſt year, as you will want the power of the head to make the roots work and throw out young fibres, and, at the time the trees are taken up, the roots will have many fibres; and as from this practice neither roots or head will have any wounds to heal the year the tree is removed, its growth will be greatly accelerated when the tree comes into the new ſituation.

All this was regularly done, and the trees removed in September, 1794. For further information, I refer to Mr. Lake, who is a good

a good orchardiſt, and will gladly anſwer any queſtion; but am fearful, from the ſeverity of the froſts of that winter, he will not be able to ſend proper certificates of the ſucceſs till next year; for, when I was there in May, 1795, they were very backward. However, this removing of large trees muſt come into this report; becauſe I beg of every planter, who wiſhes to do ſomething worthy of the premiums, that he will order a certain number of trees, more than his new plantation requires, and place them in a retired part, to keep up his plantation; and then he will ſay, "A friend in "need is a friend indeed;" for ſuch trees cannot be bought. If they are to come far, all the precautions are loſt, from the fibres of the roots getting dry. I have practiſed this before, and will anſwer for the ſucceſs.

Engrafting Bark on injured Trees.

In July I ſpent two days with Mr. Fairman, at Lynſted, in converſation on the

ſcience of Orcharding and general Agriculture; and he mentioned a misfortune which befell one of his Orchards in the preceding winter. Some fatting ſheep, in the ſeverity of the froſt, tore off the bark from many trees, actually quite round. Mr. Fairman was ſo hurt by the accident, that he was determined to do ſomething, if poſſible, to ſave the trees; and it came into his mind to try whether, if new bark was bound upon the wounds, it would adhere.

I am, SIR,

Your moſt humble ſervant,

T. SKIP DYOTT BUCKNALL.

Hampton Court,
March, 1796.

Mr. MORE.

SIR,

MR. BUCKNALL having an Orchard in my neighbourhood, I took an opportunity, a few days ſince, of examining the trees which were pruned under his

his immediate direction; and, I muſt confeſs, I was highly pleaſed with the beautiful form and appearance of moſt of them, finding my ideas were ſo ſkilfully anticipated: I expected to have found he had been too free, with his inſtruments, from knowing his motive for pruning is to produce the fruit larger, clearer, and higher flavoured.

As I am an extenſive grower of fruit, having about ſixty acres chiefly on my own eſtate, the buſineſs cannot be indifferent to me; and I ſhall be happy in following any information tending to the improvement of ſo valuable a branch of the agriculture of our county.

My inducement for troubling you is, to introduce a method of recovering apple-trees, which may have been ſtripped of their bark by ſheep, or any other accident; and, for the information of the Society, I muſt deſire you will acquaint them, that, in the ſeverity of the ſpring of 1794, ſome fatted ſheep were turned into a valuable Orchard of mine, of about twenty years growth, and they in a ſhort time actually

ſtripped

SIR,

MR. DYOT BUCKNALL having mentioned in his report of this year, that ſome gentlemen of this neighbourhood had made great exertions in the ſcience of Orcharding, and finding that the Society expect certificates of all matters that are to be introduced into their Tranſactions, I feel it neceſſary to inform you, that, in the autumn of 1794, I began to practice cloſe pruning and medication, according to Mr. Bucknall's directions, on a great variety of fruit-trees, of all ages, and that I find it anſwer far beyond my expectation; particularly in two very material points, the deſtroying of canker, and ſtopping the oozing of gum; and I am ſo well convinced of the great advantages to be derived from Mr. Bucknall's ſyſtem of cloſe pruning and medication, that I ſhall continue to practice it on a large ſcale myſelf, and ſhall alſo recommend it ſtrongly to my friends and tenants in

the county of Cornwall. I have the honour to be,

SIR,

Your moſt humble ſervant,

JOHN MORSHEAD.

Hampton,
January 17, 1796.

Mr. MORE.

The

The Thanks of the Society were this Seſſion given to RICHARD RAMSDEN BRAMLEY, Eſq. for the following Paper on a Method of conſtructing BANKS to guard againſt the Inundation of the Sea.

THE procuring of new ſcenes, on which induſtry may act with profit, is ſo deſirable an object, that I hope the Society's excuſe for introducing an idea, which, ſhould it anſwer, may be of conſiderable utility, and which is, the application of the ſyſtem of puddling in embankments made near to the ſea, and liable to be overflowed at ſpring-tides. In ſuch ſituations, water is to be found almoſt with certainty at a few feet under the ſurface; and the great bar to incloſure or embankment in ſuch ſituations being the difficulty which occurs in giving ſufficient denſity to the bank, and thereby enabling it to reſiſt the ſpring-tides, the following mode would, it is ſuppoſed (where a ſmall portion of ooze is intermixed with the ſand), be capable of binding the ſame ſo firmly, as to give it a denſity ſufficient

cient to reſiſt the impulſe of the tide. Having firſt laid out, ideally, the ground intended to be embanked, it will be neceſſary to fix pumps at one or both ends of, or more ſpaces in the line, capable of throwing up conſiderable quantities of water; and, in proportion to the work intended to be done, to have extra hands, rather than be in any reſpect deficient: the line ſhould then be drawn with a convexity to the water, and the ſoil dug over and puddled as a baſe, continuing the ſame mode for every five or ſix inches thickneſs of ſoil thrown on above the ſurface, and guarded by an external wall of looſe earth or ſilt: the pumps at each end ſhould be ſet to work, making a channel for the water to run centrally along the bank, and, as faſt as it could proceed, to have parties ſtationed ready to puddle it nearly from ſide to ſide; which being brought to a proper conſiſtence, another layer ſhould be thrown thereon, and in a curving ſhape, narrowing upwards from the baſe: the ſame proceſs in puddling ſhould be then renewed, and alternate applications

plications of freſh ſoil and puddling be proceeded on, until the bank is raiſed to the height ſufficient to guard againſt the higheſt tides.

Earth in this puddled ſtate becomes ſo denſe as to reſiſt the impreſſion of water, which can by no means penetrate it; and, though the experiment has not to my knowledge been before thought of, or tried in ſuch ſituation, yet I apprehend it will, by this means, acquire a compactneſs of ſubſtance, ſufficient to withſtand every common effort of the tides: after it is once completed, and by ſtrewing a few hay-ſeeds on the curving ſides, it would probably ſoon be covered with a complete greenſward, which would be forwarded much by the moiſture exhaling from the adjoining puddled earth; thus anſwering the double purpoſe, of making the internal earth coheſive, and promoting vegetation on the ſurface. The idea originated in reflecting on the ſolidity attained in the puddled banks of canals, &c. which mode might probably be thus applied to purpoſes of unbounded utility;

utility; and where under-drains are neceſſary to quit land-floods or ſtreams, care might be taken, prior to forming the bank, to leave proper vacancies for their reception, after its completion. Should theſe hints be thought worthy of attention by the Society, I hope their public recommendation will induce a trial to prove the efficacy; and the hearing of attendant ſucceſs will give a great pleaſure to one who wiſhes to promote every object conducive to the progreſs of Agriculture.

I am, SIR,

Your moſt obedient ſervant,

RD. RAMSDEN BRAMLEY.

Leeds, Feb. 6, 1796.

Mr. MORE.

A Bounty of FIFTY GUINEAS was this Seſſion voted to Mr. RICHARD EAGER, of Graffham Farm, near Guildford, Surry, for communicating to the Society his ſimple yet effectual Method of relieving CATTLE and SHEEP, when, from eating too voraciouſly of Clover, or any other ſucculent food, they became ſwollen, or, in the language of the farmer, *hoven*; and which, previous to this diſcovery, has been attempted to be cured by ſtabbing them into the paunch; a method of proceeding always dangerous, and very frequently fatal to the animal. A Cut of the Inſtrument invented by Mr. EAGER is annexed to the Deſcription, and is ſo ſimple that it may be procured at a very reaſonable price.

SIR,

MR. EAGER tells me that he has ſent up two of his inſtruments to you, with directions. In the encloſed Paper

Paper he explains the principle of the diſeaſe, and of the cure. I am convinced that he is right, and that the Hoven of Cattle is ſolely occaſioned by the vent upwards, for the wind, being obſtructed; which obſtruction his inſtrument removes; and I believe it to be an eaſy and infallible cure.

I am

Your very humble ſervant,

EGREMONT.

Mr. MORE.

MY LORD,

AS you have been ſo kind as to offer to forward for me, to the Society for the Encouragement of Arts, Manufactures, and Commerce, my obſervations on Bullocks and Sheep, and why, in my opinion, they are more liable to be blown or hoven with young clover, rape, or turneps, than with any other food, I have taken the liberty to encloſe this to your Lordſhip, for that Society's conſideration.

As young clover, rape, and turneps, are of a ſucculent nature, Cattle are induced to eat more than they otherwiſe would do: the extra quantity of fixed air which that ſort of food produces, more than common graſs, makes the Cattle more liable to be blown with that than any other food: the extra quantity of fixed air taken down by ſuch food more than by other graſs, occaſions the neceſſity of more wind being diſcharged from the paunch of the beaſt upwards: this forces the broad leaves before the paſſage at the entrance of the paunch, which ſtops the wind from going upwards in its regular courſe: the paunch immediately begins to ſwell; the heat of the body rarifies the air in ſo rapid a manner, that it ſtops the circulation of the blood, and the beaſt, whether Bullock or Sheep, is dead in half an hour.

I have ſent two of my inſtruments, one for Bullocks, the other for Sheep, directed to Samuel More, Eſq. Adelphi, London, for the inſpection of the Society, with directions for uſing them; and, as hundreds

of

of Cattle may be ſaved every year by this ſimple inſtrument, and the Inventor's wiſh is the public good, whatever the Gentlemen of that Society ſhall think due to my merit for the invention, it will be received with pleaſure, by

Your Lordſhip's much obliged
and moſt humble ſervant,

RICHARD EAGER.

Graffham Farm,
near Guildford,
March 2, 1796.

EARL of EGREMONT.

SIR,

I RECEIVED yours of the 12th inſtant, and have ſent you proper directions for uſing my inſtruments; likewiſe the inſtrument for removing either turneps or potatoes, if a Bullock gets them in his throat, when fed with either of thoſe roots, which inſtrument I have found to be very uſeful in ſuch caſes. I have ſaved two of my own

this winter. I have begged the favour of Lord Egremont to write you his opinion of the utility of my inſtruments, as he has had an opportunity of trying them often with ſucceſs.

I am, SIR,

Your very humble ſervant,

RICHARD EAGER.

Graffham Farm,
near Guildford,
April 23, 1796.

Mr. MORE.

THIS is to certify, that I, Charles Ellis, of Noar Farm, in the pariſh of Bramley, in the county of Surrey, had an ox violently ſtrung or hoven, and muſt have died in a ſhort time; knowing my neighbour Mr. Richard Eager had invented an inſtrument for relieving Hoven Cattle, I ſent to him, who immediately applied his inſtrument, which effectually cured my bullock in two minutes: the ox returned to his food, and, in leſs than half an hour, eat

as

as hearty as he did before. In juſtice to Mr. Eager, I have hereto ſet my hand, this 25th of April, 1796.

CHARLES ELLIS,
RICHARD SPARKES,
RICHARD STREET ELLIS,
JOHN LUFF, Labourer, who held the Bullock by the noſtril and one horn, while Mr. Eager performed the cure.

Mr. EAGER's *Inſtrument for relieving Hoven Cattle.*

Explanation of the Cut of Mr. Eager's Contrivance for relieving Hoven Cattle.

A. A. The knob of wood, and part of the cane to which it is fixed, of a proper ſize for oxen: the length of the cane to be at leaſt ſix feet.

B. B. The knob of wood, and part of the cane, for ſheep: the length of the cane to be about three feet.

Directions for uſing Mr. Eager's Inſtrument.

Let one man take the beaſt by the noſtril and one horn, the other take the bullock's tongue faſt in one hand, putting the cane down his throat with the other. Be careful not to let the bullock get the knob of the cane into his grinders. Obſerve to put the cane far enough; the whole length will not injure. You will find the obſtacle at the entrance of the paunch: puſh the cane

cane hard, and when you find the ſmell from the paunch, and the bullock's body to ſink, the remedy is performed, and nature will act for itſelf.

PAPER

IN

CHEMISTRY.

CHEMISTRY.

To obtain pure and unadulterated thoſe Drugs that are of peculiar efficacy in Medicine, is univerſally allowed to be an object highly deſerving public attention: the Society, therefore, conſidering how much the practice of Phyſic would be advantaged by procuring a Drug of ſo much conſequence as Opium, in an unſophiſticated ſtate, have this Seſſion, after due trials of ſome Opium prepared from Poppies grown in England, given FIFTY GUINEAS to Mr. JOHN BALL, of Williton, for the diſcovery of his Method of preparing it, and which, from the authority of ſeveral eminent Phyſicians who made trial of the Opium, and whoſe Letters are here inſerted, it is hoped will prove an advantageous diſcovery.

SIR,

SIR,

BY the favour of my worthy friend Dr. Brockelſby, I have taken the liberty to ſend a ſmall pot of Opium, which I have extracted this year from a few poppy heads in my garden, and requeſt of you to preſent it to the Society, with my moſt reſpectful compliments: as I make no doubt it may be brought to the greateſt perfection in this country, and rendered at one half the price at which we have it from the Eaſt, and without the leaſt adulteration; and ſhould be extremely obliged to you, if you would be ſo kind as to ſend a part of it to one or two of the principal hoſpitals for trial. I am of opinion a ſmaller quantity will anſwer, as I am informed that what we have from abroad is mixed with rice flour and other adulterations.

I am

Your moſt humble ſervant,

JOHN BALL.

Williton
Aug. 13, 1796.

Mr. MORE.

SIR,

SIR,

YOUR obliging letter of the 21ſt of November, reſpecting the ſample of Opium I received, which ſhould have anſwered, but was then confined with a ſevere fit of the gout: am exceedingly obliged for the trouble I have given, and beg leave to inform you, that my intention of ſending the Opium to you was, firſt, in order to have a fair trial made, and, if approved, to make it known to the Society, for the good of the public at large; but at the ſame time muſt ſay, that I expect a pecuniary reward, particularly from ſuch a reſpectable and opulent Society.

I think amazing quantities are conſumed every year; and am of opinion, that there is twenty times more Opium uſed now in England only, than there was fifteen or twenty years ſince, as great quantities are uſed in outward applications, and it is continually advancing in price, which con-

vinces me of the great demand for it. As you ſay in yours, that you would wiſh to know what reward I expect for making it public to the Society, I ſhould think not leſs than fifty guineas, being aſſured of its anſwering every good purpoſe; and make no doubt but we ſhall have Opium Contractors in the Weſt, and full as able to export, or even better than the Turks, being the makers as well as the exporters; the Turks being only the latter, having their Opium from the Eaſt.

I am, SIR,

Your moſt humble ſervant,

JOHN BALL.

Williton,
December 14, 1794.

Mr. MORE.

SIR,

I HAVE this poſt received yours reſpecting the Opium, and beg leave to acquaint the Society, that what I meant in my former letter, by the term half-price,

was generally for one half leſs than what we give the druggiſt in London. I have been offered, and have partly agreed with a druggiſt in town, for all the Opium I ſhall make this year, at the ſame price which Opium from the Eaſt ſhall be at that time; and I make no doubt but, when it is publicly known, that in the courſe of a very few years we ſhall be able to render it from five to eight ſhillings per pound, without the leaſt adulteration; and I am likewiſe of opinion, that the moſt barren ground, which in ſome places lets from two to ten ſhillings an acre, will, with very little expence, anſwer for the growth of Poppies. I ſhall take care this ſummer to find out, if any one particular ſort or colour produces the moſt Opium.

I am, SIR,

Your obedient humble ſervant,

JOHN BALL.

Williton,
April 27, 1795.

Mr. MORE.

SIR,

HAVE this poſt received yours reſpecting the reſolution of the Society to give me fifty guineas for the diſcovery of the proceſs for obtaining Opium from Poppies grown in Great-Britain; and, as you wiſh for an immediate anſwer, muſt beg that you will preſent my moſt reſpectful compliments, and that I agree to accept of the conditions ſtipulated in their reſolutions; and, in the courſe of a week, I will communicate to the Society the whole proceſs.

I am, SIR,

Your very humble ſervant,

JOHN BALL.

Williton,
May 25, 1795.

Mr. MORE.

MY LORDS AND GENTLEMEN,

BY your Secretary, Mr. More, I received your reſolutions reſpecting your purchaſing from me the mode of my preparing the

the ſample of Opium which I took the liberty of ſending to you for your particular inſpection, and at the ſame time to beg the favour of your having a ſufficient trial of its properties, which I find you have been ſo obliging as to have done; and likewiſe have granted to me the fifty guineas as a purchaſe of my method of preparing Opium; for which you have my ſincere thanks; and I am exceedingly pleaſed to find, that it was thought worthy the notice of ſo honourable and reſpectable a Society; and am ſatisfied there can be no other mode of preparing or collecting the true and genuine Opium, than what follows.

Nothing can be more ſimple, or attended with leſs expence, than the making or extracting the pure and genuine Opium from the large Poppies, commonly called or known by the name of Garden Poppies; the ſeeds of which I would adviſe to be ſown the latter end of February, and again about the ſecond week in March, in beds three feet and an half wide, well prepared

with good rotten dung, and often turned or ploughed, in order to mix it well and have it fine, either in ſmall drills, three in each bed, in the manner ſallads are ſown, and, when about two inches high, to thin them one foot apart; or otherwiſe, to ſow them in beds in the broad-caſt way, and thin them to the ſame diſtance (if the weather ſhould prove wet at that time, thoſe that are taken up may be tranſplanted; but I do not ſuppoſe the tranſplanted ones will anſwer, having but one ſpill-root, and will require frequent waterings); keep them free from weeds, they will grow well, and produce from four to ten heads, ſhewing large and different-coloured flowers, which, when the leaves die away and drop off, the pods then being in a green ſtate, is the proper time for extracting the Opium, by making four or five ſmall longitudinal inciſions with a ſharp-pointed knife, about one inch long, on one ſide only of the head or pod, juſt through the ſcarf-ſkin, taking care not to cut to the ſeeds: immediately on the inciſion being made, a milky fluid will

will iſſue out, which is the Opium, and, being of a glutinous nature or ſubſtance, will adhere to the bottom of the inciſion; but ſome are ſo luxuriant, that it will drop from the pod on the leaves underneath. The next day, if the weather ſhould be fine, and a good deal of ſun-ſhine, the Opium will be found a greyiſh ſubſtance, and ſome almoſt turning black: it is then to be ſcraped off the pods, and, if any, from the leaves, with the edge of a knife or an inſtrument for that purpoſe, into pans or pots; and in a day or two it will be of a proper conſiſtence to make into a maſs, and to be potted.

As ſoon as you have taken away all the Opium from one ſide of the pod, then make inciſions on the oppoſite ſide, and proceed in the ſame manner. The reaſon of my not making the inciſions all around at the firſt, is, that you cannot ſo conveniently take away the Opium; but every perſon, upon trial, will be the beſt judge. Children may with eaſe be ſoon taught to make the inciſions,

and take off the Opium; ſo that the expence will be found exceedingly trifling.

The ſmall white ſeeds in that ſtate will be found very ſweet and pleaſant, and may be eat without the leaſt danger; and it is the cuſtom in the Eaſt to carry a plate of them to the table, after dinner, with other fruits.

I intend this year to keep apart a ſmall quantity of Opium from each coloured Poppy, to find out if any one more than another produces the greateſt quantity, or of the greateſt ſtrength; and ſhall ſave ſeeds of each, to ſow ſeparately the next ſpring.

I am of opinion, that numbers of incloſures taken from hills in a ſouth aſpect, with a very little expence, may be brought into a proper ſtate for the growth of Poppies.

I ſhould think that an inſtrument may be made of a concave form, with four or five pointed lances, about the twelfth or fourteenth part of an inch, to make the in-

ciſions at once; and likewiſe ſomething of the rake-kind, ſo that the three drills which I have directed to be made in each bed, may be performed at the ſame time.

By a calculation which I have made, ſuppoſing one poppy, growing in one ſquare foot of earth, and producing only one grain of Opium, more than fifty pounds will be collected from off one ſtatute acre of land; but, upon recollecting that one Poppy produces from three, four, to ten heads, and in each from ſix to ten inciſions are made; and I am poſitive, from many of them (I mean one inciſion), the laſt year, I took away two or three grains. What muſt then be the produce? Opium is now twenty-two ſhillings the pound.

I am,

MY LORDS AND GENTLEMEN,

Your moſt obliged and moſt devoted humble ſervant,

JOHN BALL.

Williton,
June 2, 1795.

SIR,

I HAVE this day ſent you, by the coach from Bridgewater, the Opium which I promiſed you; and take this opportunity of informing you reſpecting the Poppies. If you recollect, I was fearful that the tranſplanted ones would not anſwer, and am now convinced, having a large quantity of Poppies which had ſown themſelves: when of a proper ſize, I tranſplanted about four thouſand in beds, but not one ſingle plant came to perfection; therefore, ſhall never tranſplant any more; and, not having ſaved any ſeeds the laſt year, owing to my not being at home at the proper time, I could not ſow any. The bed where the Poppies had ſown themſelves was five hundred and ſeventy-ſix feet ſquare, from which I collected about four ounces of Opium, notwithſtanding the plants were very thick; and, to ſhew you the advantage of giving them ſufficient room, from ſome few plants which were detached, I took from fifteen to thirty-four grains: theſe had ſown themſelves

ſelves on ground that had been well manured with rotten dung, which points out the utility of good cultivation: the ſemi-double, and thoſe of a dark colour, produced the moſt Opium. The pods ſhould be about the ſize of a walnut, before you make the inciſion: the dried poppy-heads which I had from the druggiſt in London, are full three times as big as what mine are, conſequently muſt produce a much greater quantity of Opium.

I am, SIR,

Your moſt humble ſervant,

JOHN BALL.

Williton,
Auguſt 22, 1795.

Mr. MORE.

SIR,

I RECEIVED the favour of your letter dated the 10th inſtant, by which I find you have extracted ſome Opium from ſingle Poppies; if you will pleaſe to advert to my

letter of inſtructions for ſuch purpoſe, I ſaid I had collected my Opium from double or ſemi-double Poppies, which accidentally grew in my garden; by which I find the produce to be more than double what you collected from the ſingle: as a proof, I will do myſelf the pleaſure of ſending you ſome Opium, which I have abſolutely collected myſelf this year from one Poppy; I ſhould ſuppoſe it more than thirty grains: twenty-eight heads grew on that Poppy: it was of the ſemi-double kind. I ſhall likewiſe ſend you ſome of the heads from which I extracted the Opium, being far preferable to the ſingle, as appears from the produce of each.

I remain, SIR,

Your very humble ſervant,

JOHN BALL.

Williton,
September 12, 1795.

Mr. MORE.

SIR,

SIR,

I OUGHT indeed to apologize for my omiſſion reſpecting the Engliſh Opium: I need not obſerve that, in its ſenſible properties, it does not ſeem inferior to any, and that it poſſeſſes the advantage of being perfectly clean, which the foreign Opium never is; a circumſtance which muſt always affect it, when given in a crude ſtate; for I am not quite ſatisfied that the ordinary method of diſſolving in ſpirit, and evaporating the tincture, leaves the Opium in an improved ſtate as a medicine. I have not had ſufficient for the experiment; otherwiſe I would have diſſolved large quantities of Engliſh and of Foreign Opium in ſpirit, for the purpoſe of procuring all the medicinal matter from each; and, if I am not much deceived, I think I ſhould have found, that the purified extract of the foreign would not have been ſuperior in efficacy to the Engliſh; that is, that if a grain, for inſtance, of each be diſſolved and evaporated, the pure product of the grain of the

the foreign will not be more efficacious than the pure product of the Engliſh grain.

I have made trial of one grain of it in a pill with ſoap upon myſelf, to allay a tickling cough which prevented ſleep, and it effectually relieved me; and this I repeated the next evening, with the like ſucceſs. I tried it alſo with a gentleman who had been in the regular habit of taking two grains of Opium every night, by ſecretly ſubſtituting an equal quantity of the Engliſh, and there was no obſervable difference in the effects; from which I concluded, that there is very little difference to be ſtated of their comparative efficacy, ſince, upon withdrawing only a quarter of a grain from the uſual doſe upon a former occaſion, the night ſeemed to be leſs comfortable; but this might perhaps have been merely accidental. However, if, upon future trial, it ſhould even be found inferior in efficacy in equal doſes, yet when the doſe becomes exactly aſcertained, I think its natural purity will give it a decided preference over that which muſt be purified by art; and, in its effects,

I expect

I expect we ſhall find it more conſtant and more equal. I have the honour to be,

SIR,

Your obedient ſervant,

J. LATHAM.

Bedford Row,
January 18, 1795.

Mr. MORE.

SIR,

IN conſequence of the requeſt from the Society for the Encouragement of Arts, Manufactures, and Commerce, I have adminiſtered the Engliſh Opium; and it affords me much ſatisfaction to be able to report, that I have found the Opium to be equally powerful, and to produce the ſame effects as the beſt foreign preparation of this drug. If it be required by the Society, I will with much pleaſure ſtate to them a deciſive caſe of the efficacy of the Engliſh Opium. I have the honour to be,

The Society's moſt obedient
and moſt humble ſervant,

GEORGE PEARSON.

Leiceſter-Square,
March 9, 1795.

SIR,

SIR,

I HAVE made trial of the Engliſh Opium, which you ſent to me from the Society, in a variety of caſes, and find it equal in point of ſtrength to the beſt extract from foreign Opium, and far ſuperior in flavour, which, in the extract, is much injured by the boiling: it is likewiſe free from thoſe impurities which are ſo abundant in the crude foreign Opium.

I am, SIR,

Yours moſt reſpectfully,

GEORGE WILSON.

Bedford-Street,
April 15, 1795.

Mr. MORE.

PAPER

PAPER

IN

MANUFACTURES.

MANUFACTURES.

The Society had long conſidered the WEAVING FISHING-NETS as an object of very conſiderable importance, and during many years offered Premiums for obtaining that end, but without ſucceſs, till this Seſſion; when a proper Specimen of the Netting having been produced, and found, on examination, to have every requiſite wiſhed for, the Premium of FIFTY GUINEAS was adjudged to Mr. J. W. BOSWELL, of Barnſtaple, the Inventor of a Machine of which a Plate is annexed, and a Sample of the Netting reſerved in the Society's Repoſitory for the inſpection of the Public.

SIR,

I BEG leave to preſent, for the inſpection of the Society, a ſample of Net, more than eight feet wide and thirty yards long, made on a machine of my own invention.

On this machine ſixty-eight meſhes are made at the ſame time, and by the ſame motion, with a perfect faſt knot, the ſame as uſed by fiſhermen, and the net made thereby has a perfect ſelvedge; circumſtances which, as they include whatever is regarded as neceſſary to perfection in Netting, will, I humbly hope, entitle me to the approbation of the Society for this invention, and procure me the diſtinguiſhed honour of their Premium offered for the beſt ſpecimen of Netting.

I ſend along with this a voucher, ſigned by the Mayor, ſome of the Corporation, and other moſt reſpectable inhabitants of this town, who ſaw me make Net on this machine: this, though not ordered, I ſend, that no proof of the truth and reality of the invention may be wanting to the Society.

I hope ſoon to preſent a ſample of exceeding fine Net, in imitation of lace, made on a finer machine, which I have now nearly ready for working. This invention, as a circumſtance equally curious and novel, may be of great utility to this country,

country, in diminiſhing the large ſums that annually leave it for the importation of lace.

I am, SIR,

Your very humble ſervant,

J. W. BOSWELL.

Barnſtaple, Devon,
Dec. 7, 1795.

Mr. MORE.

WE, whoſe names are hereunto ſubſcribed, do teſtify and declare, that we ſaw J. W. Boſwell, of the town of Barnſtaple, in the county of Devon, make Netting, ſuch as is uſed in the Herring Fiſhery, on a machine by which he made ſixty-eight meſhes at the ſame time, and by the ſame motion.

And we teſtify, that we examined the knot uſed in this Netting, and found it to be the ſame as that uſed by fiſhermen in their nets, and eſteemed by them the faſteſt and beſt knot; and we declare, that we ſaw the breadth of the ſaid Netting meaſured

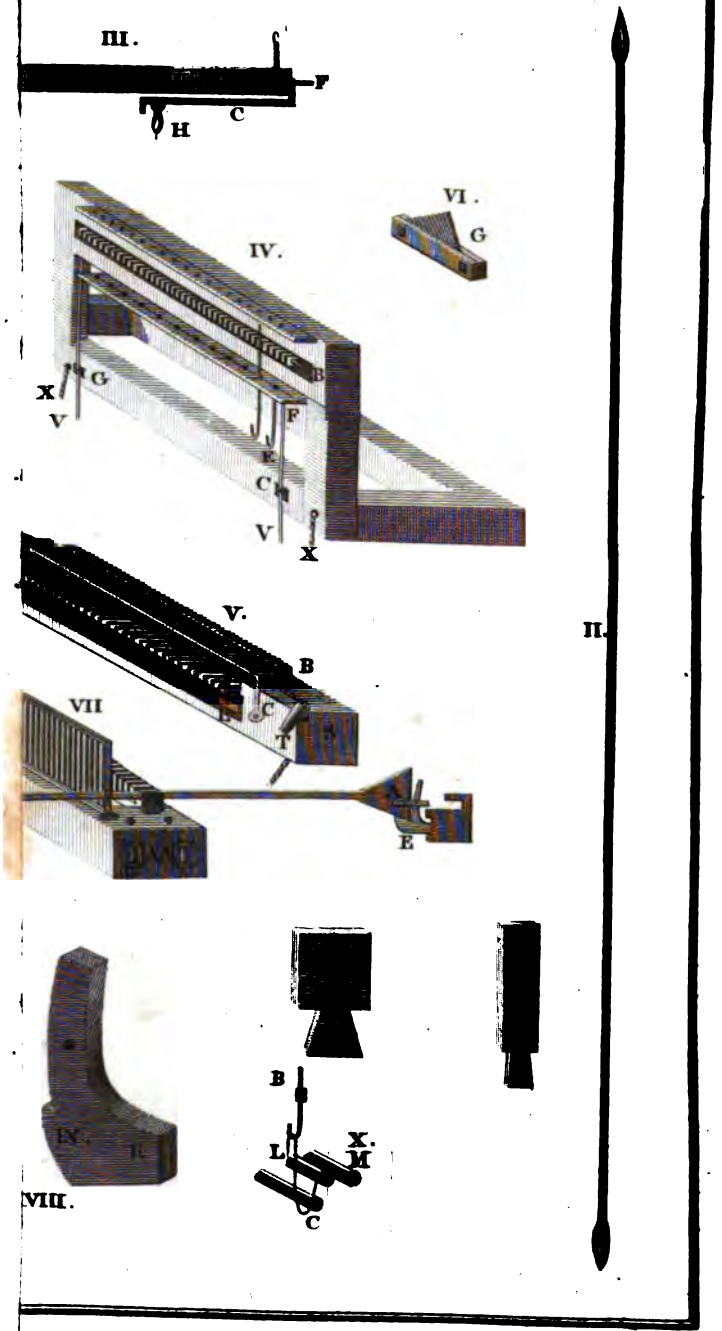
ſured as it was taken from the machine on which it was made; and that it exceeded ſix feet by more than two feet.

CHARLES MARSHALL, Mayor.
H. GARDINER TIPPETTS, Senior Alderman.
JOHN ROBERTS.
WILLIAM SPURWAY, Clerk.
JOHN CUTLIFFE.
JOHN HILL, Surgeon.
JOHN JENKINS.

MR. BOSWELL had the above-mentioned machine made in my factory. I ſaw the various ſtages of its conſtruction, and, when complete, I ſaw him make Net upon it. The machine is very ſimple, and not in the leaſt complicated in any reſpect; and the above account is exact.

R. MARCH.

Deſcription



Fishing Nets.

Deſcription of the Plate of Mr. J. W. Boswell's *Netting Machine.*

Fig. i. An oblique view of the machine.

A (ſhewn more diſtinctly in *fig.* xii), is ſupported on its centre, and reſts on the catch, E, at its extremity: when the catch, E, is moved, the extremity of A falls on a bar of wood placed under it, whoſe diſtance from E regulates the length of the meſhes of the net (this bar could not be repreſented in this view). The extremity of A is made large, that it may act as a weight, and ſhould weigh near a pound weight; by its ſhape, it keeps A between the comb at the catch, E; ſo that, in riſing to the catch, it cannot eſcape it at either ſide: its head riſes between the turning hooks in the part F, and, as it riſes, draws up the twine paſſed through the formed meſhes (as will be deſcribed), to form a new row of meſhes. Its centre is ſupported on a thick wire in the comb (better ſeen in *fig.* vii); its front paſſes through a ſleigh, repreſented in *fig.* vii, to keep it from ſhifting to either

ſide: the comb is compoſed of pieces of braſs, of which *fig.* viii is the exact repreſentation in ſhape; the lower part, B, of thin pieces, ſecured between two flat bars of iron tranſverſely, and made faſt by pewter caſt between them: thoſe flat bars are rivetted together at each end to a piece of iron placed between them, of the thickneſs of the breadth of the lower part, B, of *fig.* viii, and have pieces projecting from them at right angles, by which they are firmly ſcrewed to the mahogany frame, A A, *fig.* vii. The ſleigh is ſcrewed to the top of the frame, A A, in the front; and the ſaid frame, A A, is ſcrewed down to the ſtand of the machine (the ſleigh is made in the ſame manner as ſtocking-frame ſleighs are made). The extremity of the part, A, *fig.* i, reſts on the catch, E, which is repreſented in *fig.* ix; this catch, E, is ſupported on a thick wire through its centre in the comb, as repreſented in *fig.* v: this comb is compoſed of pieces of braſs, of which *fig.* xi is the exact repreſentation, fixed in the ſame manner as the comb already

ready deſcribed; the front part, C, of this part, *fig.* xi, is thus elongated, that it may paſs between the extremities of the parts A, *fig.* i, and ſerve as a guide to prevent their miſſing the catches: the comb is ſcrewed to the piece of deal, S, and a deep groove cut under it for the extremities of the catches to play in. The piece S is ſcrewed to the ſtand of the machine, as ſeen in *fig.* i. There are ſixty-nine of the parts, A, *fig.* i, and ſixty-nine catches; ſeventy of the parts, *fig.* viii, and ſeventy of the parts, *fig.* xi. The parts A, *fig.* i, are called jacks: to move the catches from the end of the jacks, and let them fall, the ſlur, *fig.* vi, paſſes behind them; and, as it moves, its inclined plane, G, puſhes the top of the catches forward, and conſequently moves the bottom parts from the jacks: the inclined plane of the ſlur runs within the part C of *fig.* v, which keeps it from riſing up, and its back part or body runs in the part B, *fig.* v, made of ſheet-iron, which keeps it from ſtarting back. T T, *fig.* v, are boxes which hold pullies, over which the cord, which is

faſtened to, and moves the ſlur, paſſes, round the large wheel P, *fig.* i, which, as it moves half round and back again, moves the ſlur backward and forward: the ſlur is compoſed of two pieces ſcrewed together, that the inclined plane on the lower piece may be put forward to the proper point for throwing off the catches. The large wheel, P, is moved by the axle, O, on which is a roller, round which cords paſs to a treadle at each ſide, ſo that, by preſſing down the treadle, R, *fig.* i, the ſlur moves to the left, and, preſſing R, *fig.* iv, moves to the right; the axle, O, is ſupported in front by part of the ſtand, and at the back by two oblique pieces ſcrewed above to the piece S, which meet in a point to ſupport the axle behind; when the ſlur has moved off all the catches, and the jacks are all fallen, the jacks are brought into their firſt poſition into the catches, by the bar, *fig.* xiv, that paſſes above, acroſs them all, and is ſcrewed at each end to the parts B, one of which is repreſented more at large, *fig.* xiii, and is counterbalanced by the weight,

weight, Y, at the other extremities of the parts B. On the part B is a catch, F, which will be explained. Two ſtrong wires paſs from the ends of the bar, *fig.* xiv, downwards, to the end of a flat wooden piece that lies behind N, from the centre of which a cord paſſes to the treadle, R, *fig.* ii; on preſſing down which, all the joints are put into the catches, and another motion performed, which will be explained: as the weight is very great, the treadle, R, *fig.* ii, may be aſſiſted with a moveable pulley. F is a frame of mahogany, repreſented in full, *fig.* iv: this frame is moveable backwards and forwards, and is kept in its place by the fixed frame, *fig.* vii, which it encloſes; it is armed with flat pieces of iron ſcrewed on at the places of friction, and the friction is eaſed by braſs rollers, B B, fixed at the end of the frame, *fig.* vii, and the braſs rollers, Z Z, in the ſtand of the machine, on which rollers the frame, F, reſts: this frame ſupports ſixty-eight turning hooks, one of which is drawn of a larger ſize, *fig.* xv; theſe hooks turn in the

the braſs pieces, C and F, *fig.* iv; the upper part in holes drilled to fit them, and the lower part in the collars which are formed in F, by the holes made between it and the ſmall pieces ſcrewed in its front, which are made ſo in preference to being in one piece, that, if any of the hooks ſhould be broken, it may be taken out without diſturbing many of the reſt: at each end of the ſixty-eight turning-hooks, there is a fixed hook, E, whoſe uſe is to guide the twine for forming the new meſhes: to this frame is alſo ſcrewed the ſupports of the jointed frames, H and I, which ſupport the pieces, D and K, at their extremities; the double joints of theſe frames allow D and K to be moved up and down and backwards and forwards; and at G are ſcrewed two pieces of flat iron at each ſide of the frame, with proper intervals between them, of the ſize of the ſides of the frame, H and I, between which thoſe ſides move freely up and down, backwards and forwards; but which prevents all lateral motion. The part D is repreſented more at large, *fig.* iii; the part

part K differs from it only in the ſhape of its hooks, and the poſition of its handle, which is in the middle of it: D is ſupported on the pieces F F, in the ends of the frame, I, *fig.* i; and, as D is not as long as the interval between the ends of I, it allows it a lateral as well as a circular motion. C is a ſmall bar bent at the end, and drilled at the bent part ſo as to ſlip forwards and backwards; on the axle F there is a ſlit in its head, through which the iron ſpindle of the handle, H, paſſes, and keeps it in its proper poſition; the ear bent down by the handle, H, when preſſed by the thumb towards H, moves C forward on F, and, in this poſition, the hooks of this frame meet the turning hooks, or paſs exactly under them; but when the thumb is removed, and the handle, H, preſſed to the left, the hooks of this frame then paſs between the intervals of the turning hooks: the hooks of this frame, D, are repreſented larger at *fig.* xvii; the hooked part is bent till it comes oppoſite the body, leaving an interval ſufficient for the twine to paſs between

tween its end and the body of the hook: theſe hooks are firmly fixed between D, which is an iron plate, and a piece of mahogany of the ſame ſize, by the ſcrews there repreſented; the bent part of the tail of the hook enters into the mahogany: the part, *fig.* xviii, is put between every two hooks, to preſerve the proper interval between them, and a ſlip of leather paſſes all along between them and the iron; and thus, when the ſcrews are turned tight, all the hooks are very firmly fixed (the mahogany of theſe pieces ſhould be very hard, to prevent the heads of the ſcrews from ſinking into it, which they are otherwiſe apt to do): the hooks of K are repreſented of a larger ſize, *fig.* xvi, and ſecured in the ſame manner as thoſe of D.

The turning-hooks are moved in manner following (ſee *fig.* iv):—behind the pinions of thoſe hooks there is placed the rack, B, which moves in a groove cut in the mahogany frame; in each end of this groove is a mortice, through which paſſes a piece of iron from the rack, at right angles

angles to it, to the back of the piece in which the groove is made: the iron bar (of which part is ſeen at V, *fig.* i) moves on a bolt paſſed through it, and through the holes C; and another ſimilar to it, is bolted on at the hole G: the heads of theſe bars have ſlits in them, through which ſcrews paſs to the pieces that project backwards from the rack, B; and their lower extremities are faſtened by ſcrew and nut to the deal piece, N, *fig.* i, which piece has a place cut in it, to admit the knees of the perſon who works on the machine; and thus, as he preſſes the piece N, with his knee to the right, the heads of the part V preſs the rack to the left, and thus turn all the hooks as far one way as is required; and when he preſſes N to the left, the hooks are turned the contrary way.

The netting hangs on the turning hooks, deſcends below the roller, L, *fig.* i, then paſſes under a weighted roller which hangs looſe in the netting, and afterwards aſcends and paſſes over the roller L to the roller M, on which it is rolled up as it is made; and

M is

M is ſecured from returning, by a catch and ratchet-wheel, in the common manner: a ſketch of this is given at *fig.* x, where L and M repreſent the heads of the fixed roller, L and M, *fig.* i; B the turning hook, and C the moveable weighted roller which hangs in the netting. The frame, *fig.* iv, as before ſaid, moves forwards and backwards: it is moved backwards by a cord that paſſes from it over a pulley in the top of the ſtand of the machine to the treadle, R, *fig.* iii, and is retained by the catch, E, of the part *fig.* xiii, in that poſition, which falls down between it and the firſt frame, *fig.* vii; two heavy weights draw it forwards by cords, which paſs from them over pulleys in the front of the ſtand to it, when the part C, *fig.* xiv (which goes acroſs all the jacks, and draws them up into the catches), is pulled down by the treadle, R, *fig.* ii: the part B, *fig.* xiii, is pulled down at its head; conſequently the catch E, on it, is drawn up from between the frames, and the weights, no longer reſtrained by the catches, draw the frame,

fig. iv, forwards. When the frame, *fig.* iv, is drawn forwards, the turning-hooks are then an inch before the heads of the jacks, ſo that the netting hangs quite clear of them: when it is drawn backwards, the heads of the jacks have their notches exactly under the turning-hooks' intervals; ſo that, when their catches are moved back by the ſlur, their heads riſe between the turning-hooks, and draw up a loop each, when the twine is paſſed through to form the new row of meſhes. Q, *fig.* i, is the ſeat on which the operator ſits, and W W W, the ſtand of the machine: *fig.* ii, is a ſteel wire five feet and a half long, with each end formed as the end of a common netting-needle is: the beſt method of putting the twine on this needle is, to make a loop at one end, then draw the twine to the other end, and make another loop there; then back to the firſt loop, and draw a loop of the twine through it, and another loop through this new loop; then draw it to the other end, and do the ſame there; and ſo on, till there is twine enough for the needle.

needle. The uſe of this method is, that it admits the twine to be drawn off the needle as it is wanted, without ſhifting the needle or putting the hand to it, which is a great ſaving of time; theſe loops may be drawn through with eaſe by ſmall hooks: the needle, when not in uſe, lies in a ſmall trough of its own length, one of which is placed at each ſide of the machine, of the height, and in the line of direction of the bottoms of the turning-hooks.

The figures below *fig.* 1. ſhew the method of forming the knot; and what is here repreſented of one hook of each ſort, is performed in the machine by ſixty-eight of each at one time.

1. Shews the meſh on the turning-hook, in its firſt poſition.

2. Here the hook, A, is puſhed into the meſh, and the turning-hook turned half round; and the hook, B, puſhed into the interval, between the croſſing of the ſides of the meſh and the bottom of the turning hook.

3. The

3. The meſh is drawn up the turning-hook, by the hook B; the turning-hook is turned back to its firſt poſition, and the lower part of the meſh is paſſed over the hook of the turning hook, by the the hook A.

4. The hook A is removed, and the upper part of the meſh drawn over the hook of the T hook, and the lower part of the meſh which it contains, by the hook B.

5. The hook A is puſhed into the new loop formed by the motion A; the new loop is preſſed down by the hook A, ſo as to leave the interval between it and the bottom of the T hook as large as poſſible; the T hook is turned one quarter round, that the ſaid interval may face the end of the needle; the needle is drawn through, and leaves the twine behind; the hook A is drawn back, and embraces the twine it leaves.

6. The hooks remain in the poſition of 5; the jacks (of which K and K repreſent the heads) are made to aſcend one after

another between the T hooks, previous to the jacks being made to aſcend the frame; *fig.* iv is drawn back.

7. The T hook is turned back to its firſt poſition; the hook B is drawn upwards, while the hook A is held down, by which the knot is drawn open in its proper ſituation; and, at the ſame time, by preſſing the hook B a little forward as it riſes, the knot is drawn off the turning-hook T: the hooks A and B are moved at one ſide, ſo as to be between the intervals of the T hooks; they are preſſed a little back, that the ſide of the new meſh may lie over the hook of the T hook: the part C, *fig.* xiv, is pulled down by the treadle R, *fig.* ii (by which all the jacks are drawn down, their ends placed in their catches, and the catches of the parts B, *fig.* xiii, drawn up from between the frames, *fig.* iv. and *fig.* vii, which permits the weights to draw the frame, *fig.* iv, forwards); and at the ſame time the hooks A and B are preſſed down, which places the new meſhes on the T hooks,

hooks, while at the ſame time it frees them from the jacks: the hook B is withdrawn, preſſing it at the ſame time a little upwards: the hook A is withdrawn, preſſing it a little downwards:—and thus the knot and the meſh are completed.

The jacks, turning-hooks, jointed frame, H and I, front part of K and D, the guides G, the hooks of K and D, the parts C and B, *fig.* iv, the ſleigh, *fig.* vii, the parts *fig.* xiii and xiv, the ſlur, *fig.* vi, the bars V, *fig.* i,—are all made of iron. The catches, *fig.* ix, the combs, *fig.* viii and *fig.* xi, the ſupports of the turning-hooks, C and F. *fig.* iv, and the rack B,—are all made of braſs. The frames, *fig.* iv and vii, and the backs of K and D, *fig.* i, are made of mahogany; and the ſtand of the machine, and the parts S and N, the wheel P, and the rollers,—are made of deal.

N. B. The Drawings ſent by Mr. Boſwell, ſhew the parts of the machine of the full dimenſions; but, as it was not poſſible

to make them of that ſize in the annexed Plate, the original Drawings are reſerved in the Society's Collection for the uſe of the Public.

PAPER

PAPERS

IN

MECHANICKS.

MECHANICKS.

The SILVER MEDAL was this Seſſion preſented to Mrs. WYNDHAM, for her ingenious contrivance of a method of uſing to the beſt advantage, the power applied to the CROSS-BAR LEVER, for raiſing large weights, as deſcribed in the following Letter, and ſhewn by the Cut annexed.

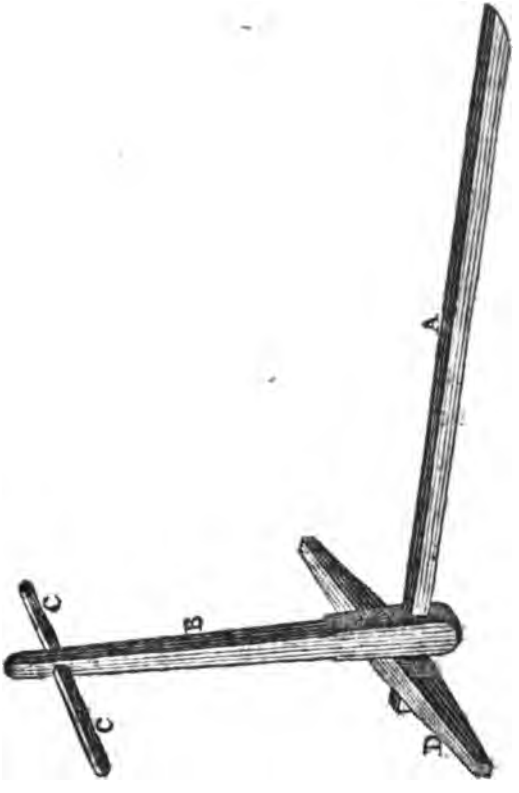
SIR,

I HAVE ſent you a Model of a mechanical invention of my own, which you will laugh at, as every body here did at firſt; but I aſſure you, it has proved of great uſe, and the workmen all approve of it very much. Since you left Petworth, a great work has been begun, of moving earth in which there are great quantities of ſtone; I obſerved that the men made uſe of the Lever in a very ineffectual manner, by ſtanding three or four at a time on the bar of the Lever; by which means ſome of them were placed ſo near the fulcrum, that their power was in a great degree loſt; beſides, they were obliged to ſteady themſelves

ſelves upon ſticks, for fear of falling, which took off from their weight upon the Lever.

My invention will be beſt explained by the Model.

Mrs. WYNDHAM's *improved Croſs-bar Lever.*



A, is

A is the Lever; B is an upright piece of wood to be fixed to the Lever, taking care that the ſide marked with the letter B be placed oppoſite the letter A, on the Lever; as by that means it inclines backwards, which increaſes the power: C is a croſs-bar for the workmen to hold by; D is a croſs-bar to be placed at bottom, behind the upright piece of wood for the men to ſtand upon, and the end of the Lever paſſes through it: theſe additions are made to take on and off, and are only to be uſed when the ſtrength of the rocks require an increaſe of power. The workmen all agree that it is of very great ſervice to them; and I wiſh I could prevail upon you to come here, and I dare ſay that your great knowledge would ſuggeſt ſome improvement.

I am, SIR,

Your obedient humble ſervant,

ELIZABETH WYNDHAM.

Petworth,
October 28, 1795.

In a ſubſequent letter, dated February 22, 1796, there is the following paſſage:

In

" In my explanation of the Lever, I forgot to mention, that if the rock to be moved ſhould be, as I have often ſeen it, placed ſo high above the ground as to put the men in danger of being hurt by falling, on the diſplacing of the rock, in ſuch caſe the Lever may be reverſed, ſo that the men will then ſtand upon the bar, where, in common caſes, their hands are placed; and thus they will not be in danger of falling."

The ſeveral parts of the Lever, as ſhewn in the Cut annexed, are marked as they were in the Model, which is reſerved in the Society's Repoſitory for the inſpection of the Public.

A Bounty

A Bounty of THIRTY GUINEAS was this Seſſion voted to Mr. JOHN UPTON, of Petworth, Suſſex, for his contrivance of a MOVABLE BARN-FLOOR, as deſcribed in the following Papers, and exemplified by the Plate annexed; and of which a complete Model, on a ſcale of one inch and a half to the foot, is reſerved in the Society's Repoſitory for the uſe of the Public.

THE heavy and continual expences attending Barn-Floors, and the great conſumption of valuable timber in the conſtruction of them, has always been very injurious to the landed intereſt of the kingdom; and the great waſte of Corn in threſhing upon them, as ſoon as they begin to decay, has ever been a heavy loſs to the tenants and to the public: it was therefore very deſirable that ſome new plan ſhould be diſcovered leſs waſteful and more durable.

John

John Upton, of Petworth, in Suſſex, has conſtructed a Barn-Floor in that neighbourhood, which he hopes will accompliſh both theſe objects. The Barn-Floors now in common uſe conſume the large and valuable oak-timber, often ſuch as might be converted into two-and-a-half inch ſhip-plank; and which is, at this time, very difficult to be procured at any price: they laſt only from fifteen to twenty years; and, as they are ſubject to frequent injuries from the exertions of the horſes in drawing loaded waggons into the barn, they require frequent repairs; and, if one plank fails, it cannot be effectually repaired without taking up all the planks from the door to the part that has given way.

Hollow beech-floors, which were introduced a few years ſince, on account of the very high price of oak-timber, are found not to wear more than ſeven or eight years, and conſequently do not anſwer. Hollow floors, whether of oak or beech, are much better to threſh on than thoſe laid on the ground; and, as the planks of the

propoſed Floors are much thinner than thoſe in preſent uſe, the vibration is ſtronger, and conſequently the corn more thoroughly threſhed out than on the common hollow floors.

The propoſed Barn-Floor effectually prevents a waſte of corn in threſhing; it gives an addition of at leaſt one foot in height at the doors, by which means a higher load of corn can be admitted; and alſo, as the horſes do not draw the waggon up an aſcent, and upon a ſlippery floor, but upon a hard bottom, and level with the farm-yard, two horſes can perform the work, where four are now generally uſed. It affords a warm and convenient ſhelter for hogs, when it is down; and, when it is turned up, it may be uſed as a ſtable, ox-ſtall, hovel, or cart-houſe; two men can place or diſplace it in five minutes: and, from its allowing at all times an eaſy acceſs to dogs and cats under it, it affords no harbour for vermin.

The following are Statements of the Materials uſed, and the Expence of the Barn-Floors, reſpectively.

BARN-FLOORS NOW IN COMMON USE.	£.	s.	JOHN UPTON'S BARN-FLOOR.	£.	s.
The original Floor laid on the ground, with three cills, and two-inch oak-plank, which in general laſts from fifteen to twenty years - - -	19	10	The new-conſtructed Hollow Floor is compoſed of oak-plank, five feet eight inches in length, and one inch and a half thick; whereas three-fourths of the plank uſed in the original Floors, are fourteen feet in length - -	23	10
The Hollow Floors on Brick Quoins, with two-and-a-half inch oak-plank - -	31	10			

The plank for the laſt-mentioned Floor may be compoſed of deal, beech, or elm, as they will be perfectly free from decay by damps, which will conſiderably leſſen the expence of the new-conſtructed Floor: the eſtimates are made when the materials are ſupplied by a carpenter. When they are furniſhed from the eſtate, a very conſiderable further advantage ariſes to the landlord, as the new-conſtructed floor is compoſed of ſmall ſcantlings, which may be had from ſhort timbers, much inferior in value to thoſe uſed for the other floors.

Where

Where there are more than one barn in a farm-yard, this Floor may be further uſeful, as it may be removed from one barn to another, and ſave the expence of at leaſt one out of three.

It is ſuppoſed that a Floor conſtructed in this manner will laſt for an hundred years, or indeed as long as the barn; becauſe it is perfectly free from damps, on account of the diſtance at which it lies above the ground, with a free current of air paſſing under it when down; and, when it is turned up (which it probably will be at leaſt half the year), it will be as free from decay as the poſts or beams of the barn.

WE, whoſe names are hereunto ſubſcribed, tenants on a farm whereon John Upton has laid his new-conſtructed Barn-Floor, do certify, that, in all reſpects, it exceeds every thing we have ſeen of its kind, particularly in threſhing, as its vibration aſſiſts the threſher beyond conception.

WILLIAM KNIGHT.
THOMAS HOLT.

SIR,

SIR,

I FIND they have threſhed ſome corn upon the new Barn-Floor, and the threſhers ſay it is the beſt floor they ever threſhed upon, on account of its ſuperior elaſticity, which I thought muſt be caſe; it has alſo another property, which I did not foreſee, and which is occaſioned by the great cavity under the floor, and which is alſo uſeful to farmers, that is, that every ſtroke of the flail reſounds ſo much, that it may be heard for a mile round; ſo that the farmer, when on any part of his grounds, can tell whether his men in the barn are working or idle.

I am, SIR,

Your very humble ſervant,

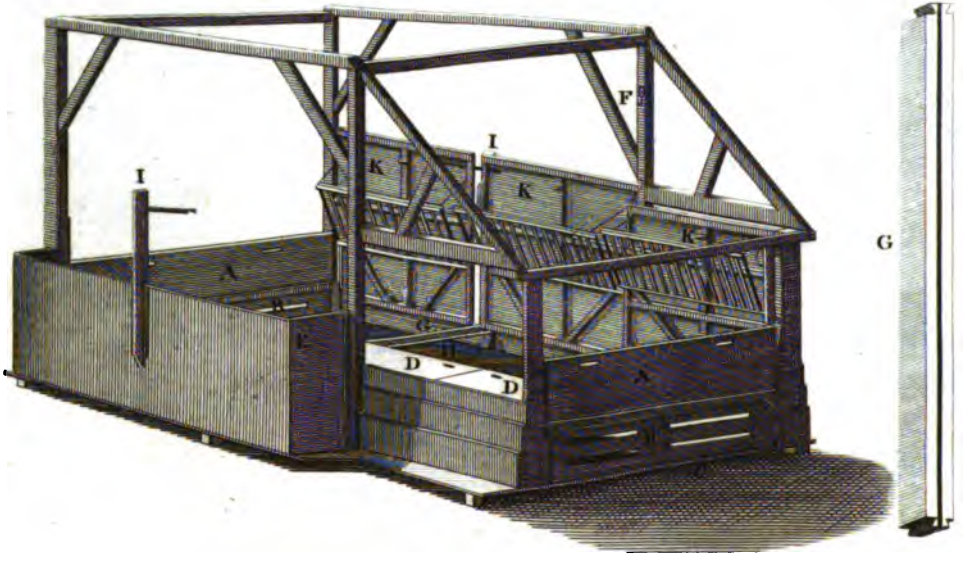
EGREMONT.

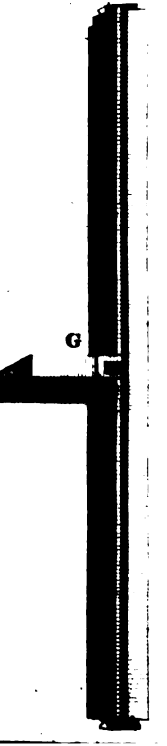
Groſvenor-Place.

Mr. MORE.

Explanatoin

Plate. 4.





Explanation of the Plate of Mr. UPTON's *new-conſtructed Barn-Floor; one part of which ſhews the Floor laid down for threſhing on; the other, the part raiſed up with racks for feeding Cattle, &c.*

A. Rack-boards.

B. Slip-boards, to admit air.

C. Wooden door-ſills for the ſlip-boards, B, to reſt on.

D. Moveable floors, to one part of which are wooden legs ſerving to ſupport it, when it is neceſſary to put the diſplaced timbers into the receſs E.

E. Receſs to receive the threſhed corn before it is winnowed, or to hold the moveable timbers.

F. An iron hook to lift up the floor, when not uſed for threſhing on: there are two of theſe hooks uſed in the barn at large.

G. Moveable timbers which ſupport the floor, having grooves along their ſurfaces, to prevent the loſs of corn: two

of theſe timbers are ſhewn larger at G G; one being the croſs-piece, with a leg and a tenon for fixing in the ſtone mortice; the other deſigned to lie lengthwiſe, and level with the floor of the barn: in the ground are fixed ſtones, with mortices in them, to receive the tenons of the above-mentioned timbers; but which, though ſhewn in the Model, could not be expreſſed in this ſmall Plate.

H. The ground, which ſhould be made of materials ſufficiently hard to prevent the horſes or waggon making impreſſion therein.

I. I. Poſts with iron haſps to ſupport the floors when out of uſe.

K. Racks to feed cattle, when the barn is applied to other purpoſes than threſhing on.

When the Floor is not wanted for threſhing on.

Firſt turn up the floors, and fix them faſt with the iron pins, bolts, and haſps; then take

take out the middle timbers; next, the croſs timbers: place them on the ground, on that ſide which is oppoſite to the receſs, where the timbers are to be depoſited when out of uſe; then let down that part of the floor that has legs to ſupport it: put the timbers into the receſs, and turn the floor up again.

The Premium of FIFTY GUINEAS, that for ſeveral years paſt was offered by the Society for the forming a METAL ROPE or CHAIN, which ſhould anſwer the purpoſe of a Hempen Rope in large Manufactories, was this Seſſion adjudged to Mr. WILLIAM HANCOCK, of Birmingham, from whom a proper Sample of the Chain, and the annexed Certificates, were received; and of which a Wood Cut is annexed.

THIS is to certify, that I have ſeen a Chain or Iron Rope, invented by William Hancock, uſed by Mr. William Bingley, in his Plated-wire Manufactory, for the very powerful purpoſe of drawing large wire; and I obſerved, that it runs as flexible on the pulley as an hempen rope; and I believe it to be much ſtronger, and will wear much longer, than a rope of two inches diameter, made of the beſt hemp: and I do alſo believe, that its ſtrength may be more ſafely relied on, as the wire of which it is made, has, in every part of it, firſt

firſt borne an equal purchaſe, in being cold drawn, for the purpoſe of making the ſaid Chain or Iron Rope.

J. MILES.

Birmingham,
October 31, 1795.

THIS is to certify, that I have frequently ſeen and admired, an Iron Chain uſed in Mr. Bingley's Manufactory for Drawing Wire, made on Mr. Hancock's principle; and which I have no doubt will anſwer the purpoſe of drawing coals much better than a rope, it having an advantage of being as ſtrong where it coils round a ſmall barrel as where it is ſtrait. A rope is weakened in being bent, and takes more power to open and ſhut than the Chain. Bad iron cannot be uſed in it, nor can a faulty place eſcape being found, in the operation of cold-drawing.

WILLIAM WHITMORE.

Birmingham,
October 31, 1795.

SIR,

IN order to ſtrengthen the claim, the inventor of the Metallic Rope or Chain has to the bounty and encouragement of the Society, I take the liberty to acquaint you, that I have made uſe of ſuch Chain, made by William Hancock, for about four years: it works over a nine-inch pulley, and anſwers admirably well; and as, from Hancock's ſituation in life, he is not able to make them for ſale, I have executed many orders: and, if you have any opportunity to recommend a trial of them to any gentleman you may know in London, ſhall eſteem it a favour, as I am ſure they ſurpaſs any thing of the kind hitherto made.

I am, SIR,

Your obedient humble ſervant,

WILLIAM BINGLEY.

Birmingham,
November 19, 1795.

SIR,

SIR,

I AM favoured with yours of the 27th paſt, reſpecting Hancock's Iron Rope or Chain, and have, in reply, to inform you, that a Chain of his making is now in uſe at our foundery here; and has been, for five or ſix years paſt, uſed inſtead of a rope at the large triangles, for loading caſtings, breaking old guns, metal, &c. The iron or wire of which it is made, is about three-eighths of an inch diameter, and occaſionally lifts two or three tons.

We had ſome time ſince a chain of that kind worked in a pit about fifty yards deep, and a hempen rope to work againſt it; but the colliers taking a prejudice againſt it, we employed it otherways.

We have now, at moſt of our engines where ropes are required, adopted thoſe Chains for drawing up piſtons from the cylinders, &c. and, where ropes are ſubject to ſteam and wet ſituations, they are far preferable to ropes, as they work perfectly pliable and eaſy over either pulleys or rollers.

We have had ſome of thoſe Chains made from Engliſh and Foreign Iron, but they have ſometimes failed, through the iron being faulty.

The only iron to be depended upon, is thick wire, as the drawing of it detects any fault in the quality. Chains made from this wire would come into more general uſe inſtead of ropes, if it were not for the ſcarcity as well as high price of this kind of iron.

We have had a Chain from Hancock a few weeks ſince, ſeventy-one yards long, bare three-eighths wire, weight two hundred and ſixteen pounds, or about three pounds per yard; will work two tons. If the obſtacles before mentioned were not in the way, we ſhould have thoſe Chains in more general uſe than they are; but this objection ſhould not deprive the claimant of the merit due to his invention.

I am, SIR,

Your moſt obedient ſervant,

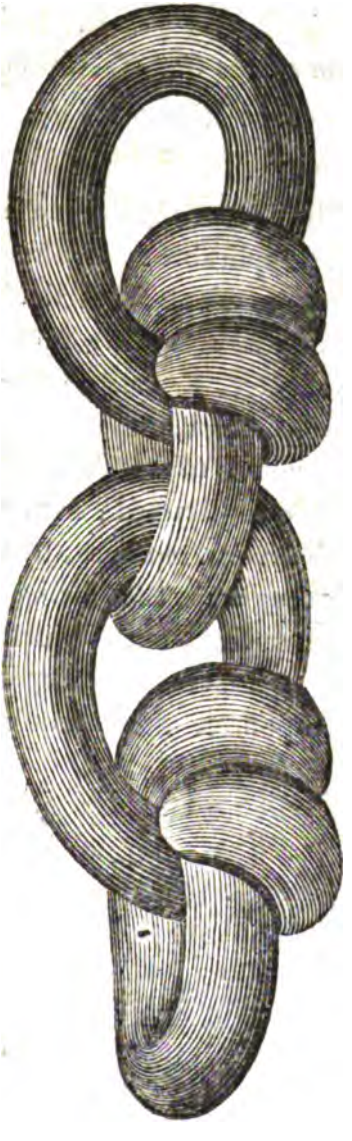
WILLIAM JOHNSON.

Bradley,
Dec. 2, 1795.

Mr. MORE.

Mr.

Mr. WILLIAM HANCOCK's *Metal Rope or Chain.*



Deſcription of the Cut of Mr. HANCOCK'S *Iron Rope or Chain.*

Theſe Chains are deſigned as a ſubſtitute for ropes, and applicable to all the purpoſes to which they are adapted, particularly in the working of coal and other mines; alſo for cranes, wells, &c. From the mode of making the common Chains, they are very uncertain, and are known to break in the welded parts when over-ſtrained; which objection is, in theſe Chains, removed, by the manner in which they are made, being woven together (while cold) out of the ſtouteſt iron drawn into wire, and ſo managed, that it is next to impoſſible there ſhould be a bad link.

FORTY GUINEAS, being the Premium offered for a method of CLEARING NAVIGABLE RIVERS of WEEDS, was this Seſſion adjudged to LE CHEVALIER DE BETANCOURT MOLINA, whoſe Paper and a Plate of his Contrivance are annexed.

SIR,

I HAVE the honour to tranſmit to you, to be laid before the Society for the Encouragement of Arts, Manufactures, and Commerce, a Model, with a Drawing and Explanation, of a Machine for clearing Navigable Rivers and Canals from Weeds.

Should my idea fortunately meet approbation, I ſhall deem myſelf amply recompenſed in receiving the diſtinguiſhed mark of honour propoſed by the Society for the ſucceſsful invention of the above object. I have the honour to be moſt reſpectfully,

SIR,

Your moſt obedient ſervant,

DE BETANCOURT MOLINA,

Director of the Royal Cabinet of Machines of his Catholic Majeſty.

Hans Place, Sloane-Street, Chelſea, January 31, 1796.

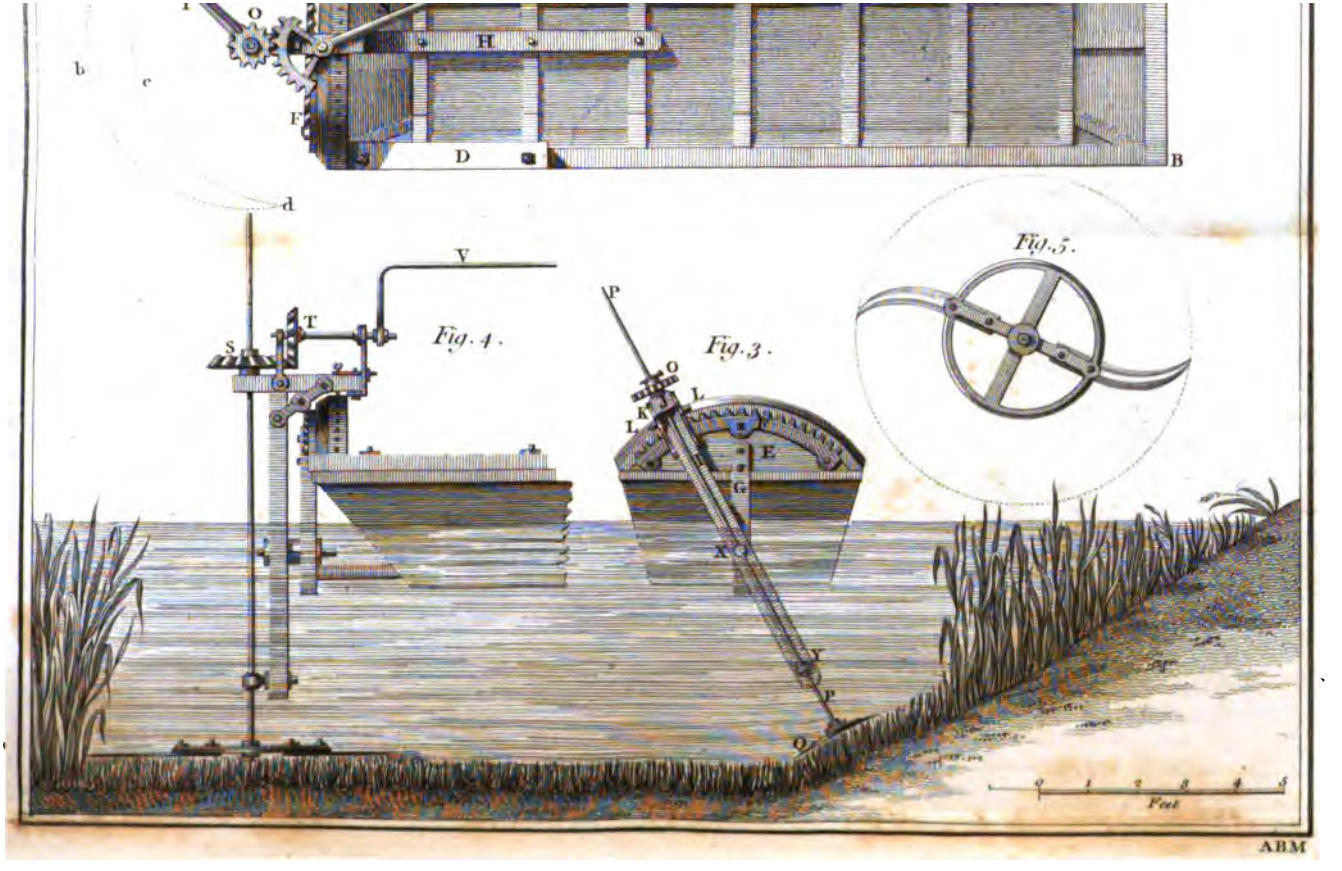
Mr. MORE. *De-*

Deſcription of the Plate of the Machine for Cutting Weeds in Navigable Canals and Rivers.

To clear Navigable Canals and Rivers from Weeds, which commonly grow in their bottoms and banks, two operations are requiſite; firſt, either to cut or pluck them up by their roots; and next, to take them out of the water, if the current be not ſtrong enough to carry them away.

The ſecond operation is evidently of ſmall importance: the firſt is the only one for which a machine ſeems neceſſary to be propoſed to the public, by the Society for the Encouragement of Arts, Manufactures, and Commerce.

A machine calculated for plucking up weeds by the roots would neceſſarily require a great variety of motions, and parts of different ſhapes, adapted to the different ſorts of plants, which would render the machine too complicated for the ſkill of that claſs of people for whoſe management it is intended; beſides, in ſtiff clays, in which



O
H
b
c
F
D
B
d
V
T
S
Fig. 4.
P
O
K
L
L
E
G
X
Y
P
Q
Fig. 3.
Fig. 5.
0 1 2 3 4 5
Feet
ABM

which the roots penetrate a conſiderable depth, it would require not only a very great power, but alſo ſuch a waſte of time as to render the operation too ſlow and expenſive; another inconvenience ſtill greater, attending ſuch an operation, would be, the deſtroying the texture which the fibres of the roots form with the earth, particularly in banks, thereby preſerving them from being deſtroyed by the current. The loſs of this protection would occaſion a gradual accumulation of earth in the bottom of the Rivers and Canals, and thereby render their navigation either difficult or impracticable. The Machine hereafter deſcribed, and ſhewn in the Plate, is therefore intended for cutting or mowing the weeds, and not for plucking them up by the roots, being perſuaded the former method is more conformable to the intention of the Society.

Fig. 1, 2. A, B. A barge or flat-bottomed boat, which ſupports the machine: its length, from eighteen to twenty feet; its breadth at the top, five

feet ſix inches; and its depth, two feet ſix inches: theſe dimenſions may vary according to the ſituations and uſes to which the machine is to be applied.

C, D. Two pieces of wood fixed in the ſegment E, *fig.* 3, and with which the machine is held faſt to the barge.

E. A wooden ſegment, whoſe arch is deſcribed from the centre X: this ſegment meaſures 90 degrees, and each 5th degree has a hole to receive an iron pin, with which the beam I J is fixed in a a direction perpendicular to the plane in which the weeds grow.

F. A quarter of a circle of caſt iron with teeth, fixed upon the ſegment E.

G. An upright poſt (fixed at one end upon the ſegment E, and upon a croſs poſt H), in which the axis X is faſtened.

H. A croſs poſt which pins through, and is fixed to the bottom of the barge, ſupporting the upright poſt G.

I J. A beam which moves upon the axis X: its length, from its axis X to its lower end,

end, ought to be in proportion to the depth in which the machine is to cut.

K. Two iron pieces faſtened to the beam I, and to the croſs-poſt J, and which are to receive between them a worm L, which is to take into the teeth of the quarter of a circle F.

L. An iron worm whoſe axis paſſes through the two iron pieces K, by which the beam I is to be brought to a direction perpendicular to the plane in which the weeds grow.

M. Axis fixed at the top of the beam I J, on which turns the lever N.

N. A lever which turns on the axis M, and whoſe ſhorter end terminates in a toothed ſegment, of about a third part of a circle.

O. A toothed wheel, whoſe diameter is one half the diameter of the one in which the ſhorter end of the lever terminates, and whoſe teeth take into them.

P. A rod of bolt iron, which paſſes through the centre of the wheel O, and through a ring Y, fixed near the bottom of

of the beam I J; on the lower end of which rod is fixed the handle of a cutter: this rod, at its upper part, has ſeveral holes, ſix inches diſtant from each other, and which are to receive an iron pin, which is to fix the wheel O, and to raiſe or lower the cutter according to the depth of water.

Q. The cutter with its handle, which is fixed on the iron rod P, which may be made of a variety of forms, to cut the weeds with a ſtroke neither too oblique nor too direct, which practice will beſt determine; but perhaps the ſimple form expreſſed in the figure would be as good as any. It is evident, that the lever N being moved by one or two men, the wheel O will turn, and with it, the rod P, together with the cutter. It is equally clear that, during the time in which the lever N deſcribes a quarter of a circle, the cutter will move a complete ſemicircle: the ſpace *a b d c a* will be cut at each ſtroke, the diſtance from *b* to *c* being the ſpace paſſed by the boat between

tween the ſtrokes, which muſt be leſs than the length *e f* of the cutter.

Having thus deſcribed the conſtruction of this Machine, and the manner in which it acts, let us conſider how it is to be uſed.

In every River or Canal intended to be cleared from its weeds, the firſt thing is to meaſure the depth of the water, and arrange the machine in ſuch a manner, that the end of the beam I. be at leaſt one foot, and the cutter about ſix inches, higher than the bottom. This being done, the barge may be drawn by a rope againſt the current, in order that the weeds may be carried away as they are cut: if the ſtream be not ſufficient for that purpoſe, a man or two at the lower end of the barge will eaſily draw them up into it by hooks, nets, or otherwiſe.

As weeds often grow on banks that have more or leſs obliquity, the beam may be placed in a direction perpendicular to the bank, by firſt taking out the iron pin which faſtens the croſs-poſt J and beam I, upon the ſegment E; then turn the worm L till the beam comes into the required poſition,

and fix it by the iron pin into the ſegment, as before. As the inclination of the ſides of Navigable Canals is never ſo great as an angle of 45 degrees, neither the arch of the ſegment E, nor that of the toothed piece F, need be greater than the quarter of a circle.

To ſharpen the cutter when neceſſary, the beam, by turning the worm all over the quarter circle F, is to be completely turned, ſo as to preſent its lower end, and the cutter upwards, which will be very eaſily done with the hand.

The repeated ſtrokes of the cutter may be preferable, when either the plants are ſo hard, or ſo thick, as to require a great force to cut them; but otherwiſe, the rotatory motion will be far more expeditious; in which caſe, there may be two oppoſite cutters (*fig.* 5); and the lever N, together with the wheel O, being taken off (*fig.* 1 and 2), two bevel-toothed wheels S T (*fig.* 4) will be placed, to be turned by the winch V; theſe cutters may be ſharp on both ſides, and, by changing the motion of either

either edge, may be uſed according to the nature of the weeds; and here it may be remarked, that the quicker the motion of the cutter, the eaſier will the weeds be cut, and leſs power loſt by their reſiſtance.

The diameter of the bevel-wheels in the figure is as two to three; but practice and judgment may ſuggeſt ſome alteration in the proportion of theſe as well as other parts of the machine, from the different reſiſtance required to be overcome.

PAPER

IN

COLONIES AND TRADE.

COLONIES AND TRADE.

In conſequence of the following Letter and Certificate, the GOLD MEDAL was this Seſſion voted to ROBERT WISSETT, Eſq. for having been inſtrumental in promoting the organzining Bengal Silk in England.

SIR,

AS the article of Raw Silk has occaſionally engaged the Society's attention, I take the liberty of ſubmitting to them the following facts, which, I flatter myſelf, will be found not altogether inconſiſtent with their views.

The magnitude and importance of our Silk Manufactures are too well known to need pointing out; yet, although they have been eſtabliſhed in full vigour for upwards of a century, our ſole dependance for the raw material has, till within theſe laſt twenty years been entirely placed upon foreign powers: and indeed, notwithſtanding the great exertions that have been recently

made by the Eaſt-India Company, it will be ſeen that, even at the preſent period, we are obliged to have recourſe to Italy and other parts of the Continent for not leſs than eight hundred thouſand pounds weight of this commodity, at an expence of upwards a million ſterling per annum, one half of which is imported in a thrown ſtate; that is, having undergone the preparatory operation of twiſting, to render it more fit for the uſe of the weaver in the article of warp.

In my official capacity, as Secretary to the Committee appointed under the Court of Directors, to ſuperintend the Eaſt-India Company's commercial concerns, it came within my knowledge, that, in the Bengal Provinces (now forming a part of the Britiſh Empire), the culture of this article was capable of being very conſiderably extended: and, in converſation with various perſons, whoſe knowledge was competent to the ſubject, I became convinced, that Bengal Raw Silk could be thrown in this country, ſo as to ſerve as a ſubſtitute for a

very conſiderable portion of what is now ſupplied from Italy.

I thereupon ſubmitted my ideas to my Honourable Employers, who were pleaſed to reſolve upon a trial of the meaſure; and I have the pleaſure to obſerve, that, ſo far as the experiment has hitherto proceeded, it has anſwered every expectation that could be wiſhed.

At the ſale laſt week, twenty-nine bales, weighing four thouſand pounds, thrown principally at Macclesfield, ſold at very encouraging prices, which has fully eſtabliſhed the practicability of the meaſure; and when I inform the Society, that even this ſmall eſſay has given employment to upwards of five hundred perſons, that would otherwiſe have been deſtitute of means of ſubſiſtence, they will, I flatter myſelf, view it as a national object not unworthy of their favourable notice. I have the honour to be,

SIR,

Your moſt obedient humble ſervant,

ROBERT WISSETT.

Eaſt-India Houſe,
March 12, 1795.

Mr. MORE. SIR,

SIR,

IN reply to your letter of the 10th ult. you will be pleaſed to inform the Committee of Colonies and Trade, that the plan for organzining Bengal Raw Silk, was firſt ſuggeſted to the Committee of Warehouſes, who have the management of the Company's commercial concerns, by Mr. Wiſſet, their Clerk, whoſe merit on this and on other occaſions the Committee think highly of; and, in his official capacity, he has been very inſtrumental in forwarding its execution. Sir Stephen Luſhington being confined with the gout at the time of the receipt of your letter, is the reaſon why it has not been ſooner replied to.

I am, SIR,

Your moſt obedient ſervant,

D. SCOTT.

Eaſt-India Houſe,
April 9, 1796.

Mr. MORE.

REWARDS

REWARDS

BESTOWED BY THE

SOCIETY,

FROM OCTOBER, 1795,

TO JUNE, 1796.

REWARDS

BESTOWED IN

AGRICULTURE.

Class 1. TO JAMES DENTON, Esq. for having planted thirty-eight acres with Acorns, the GOLD MEDAL. See page 117.

Class 9. To the Rev. JOHN ROBERT LLOYD, for having planted sixty thousand and twenty Oaks, the GOLD MEDAL. See page 120.

To THOMAS RICHARDSON, Esq. for having planted one hundred and twenty-one thousand four hundred and thirteen Mixed Timber Trees, the SILVER MEDAL. See page 124.

To

To THOMAS SKIP DYOT BUCKNALL, Esq. for his extension of Observations on Orcharding, the GOLD MEDAL. See page 207.

Class 85. To LEWIS MAJENDIE, Esq. for having dibbled fifteen acres with Beans, and sown the land the same year with Wheat, TWENTY GUINEAS. See page 131.

Class 97. To JOHN KINGSTON, Esq. for having planted twenty-four acres with Potatoes on land that had not borne Potatoes during the last ten years, FIFTY GUINEAS. See page 141.

Class 107. To Mr. ROBERT DAVIS, for having raised nine hundred and thirteen plants of the Rheum Palmatum, the GOLD MEDAL. See page 145.

To NICHOLAS ASHTON, Esq. for Curing Rhubarb, the SILVER

SILVER MEDAL. See page 149.

Claſs 119. To Mr. JOHN CROCKITT, for having made two thouſand one hundred and fifteen yards of Hollow Drains, THIRTY GUINEAS. See page 183.

To Mr. EDWARD KNIGHT, for his Set of Harrows, FIFTEEN GUINEAS. See page 198.

To Mr. RICHARD EAGER, for his method of curing Hoven Cattle, FIFTY GUINEAS. See page 242.

Claſs 133. To Mr. RICHARD MOYLE, for having gained and ſecured from the inundation of the Sea, thirty-ſix acres of Land, the GOLD MEDAL. See page 152.

IN CHEMISTRY.

To Mr. JOHN BALL, for his method of preparing Opium from

from Peppies grown in England, FIFTY GUINEAS. See page 253.

IN POLITE AND LIBERAL ARTS.

Claſs 182. To Miſs ELIZA BARRETT, for a Drawing of a View at Carſhalton, after Nature, the GOLD MEDAL.

Claſs 183. To Miſs MARY ANN MASTERS, for a Drawing after Rembrant, of Abraham ſacrificing Iſaac, the SILVER MEDAL.

To Miſs HARRIET LETITIA WATTS, for a Drawing of Children, after Bartolozzi, the SILVER MEDAL.

Claſs 188. To Mr. JOHN JAMES MASQUERIER, for a Perſpective Drawing of Mr. Fulton's Mill for ſawing Marble, the GREATER SILVER PALLET.

To Mr. WILLIAM FADEN, for his Map of Suſſex, the GOLD MEDAL.

IN

IN MANUFACTURES.

Claſs 202. To Mr. J. W. BOSWELL, for his invention of Weaving Fiſhing-Nets, FIFTY GUINEAS. See page 273.

IN MECHANICKS.

To Mrs. WYNDHAM, for Croſs-bar Lever improved, the SILVER MEDAL. See page 295.

Claſs 214. To Mr. WILLIAM HANCOCK, for his invention of a Metal Rope or Chain, FIFTY GUINEAS. See page 308.

To Mr. JOHN UPTON, for his invention of a Hollow Moveable Barn-Floor, THIRTY GUINEAS. See page 299.

Claſs 218. To the Chevalier DE BETANCOURT MOLINA, for a Machine for Clearing Navi-

gable Rivers and Canals of Weeds, FORTY GUINEAS. See page 315.

IN COLONIES AND TRADE.

To ROBERT WISSETT, Esq. for introducing the organzining Bengal Silk in England, the GOLD MEDAL. See page 327.

PRESENTS

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With the Names of the DONORS.

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Caldecott, John, Eſq. *Rugby, Warwickſhire*
Cameron, Donald, Eſq. *George-ſtreet, Manſion-houſe*
Campbell, Duncan, Eſq. *Adelphi*
† Campbell, Archibald Montgomery, Eſq. *Upper Wimpole-ſtreet*
Campbell, Archibald, Eſq. *Argyll-ſtreet*
Camper, Peter Everard, Eſq. *Devonſhire-ſtreet, Portland-place*
Capper, Francis Hall, Eſq. *Queen's-College, Oxford*
Carew, Reginald Pole, Eſq. M. P. F. R. and A. S. *Charles-ſtreet, Berkley-ſquare*
Cartwright, Charles, Eſq. *India-houſe*
Caſlon, William, Eſq. *Saliſbury-court*
P Cater, Mr. Richard, *Bread-ſtreet, Cheapſide*
Chadwick, Thomas, Eſq. *Hampton, Middleſex*
Chalie, John, Eſq. *Bedford-ſquare*
Chambers, Chriſtopher, Eſq. *Mincing-lane*
Chandler, Henry John, Eſq.
Charington, John, Eſq. *Mile-end*
Cherry, Benjamin, Eſq. *Hertford*
Child, Mr. John, *Golden-ſquare*
Chippendale, Mr. Thomas, *St. Martin's-lane*

Chiſwell, Richard Muilman Trench, Eſq. M. P. and F. A. S. *Portland-place*

Chriſtie, Daniel Beat, Eſq.

Chriſtian, John Giles, Eſq. *Doctors-commons*

Claggett, Charles, Eſq. *Pantheon*

Claridge, John, Eſq. *Upton-on-Severn, Worceſterſhire*

Clarke, Richard, Eſq. *Lawn, South Lambeth*

P Clark, Mr. James

††Clarke, Richard, Eſq. Alderman, F. A. S. *Bridge-ſtreet, Blackfriars*

Clarke, Ralph, Eſq. *Robert-ſtreet, Adelphi*

Clarke, Mr. Henry, *Gracechurch-ſtreet*

Clarke, Richard, Eſq. *Worceſter*

Clarke, William, Eſq. *Gracechurch-ſtreet*

Clay, Henry, Eſq. *Birmingham*

Clephane, Colonel William Macleane

Cloſe, Rev. Henry John, *Ipſwich*

Coates, Mr. George

Cole, Benjamin, Eſq. *Batterſea-riſe, Surry*

Colen, Joſeph, Eſq. Governor of York Fort, *Hudſon's Bay*

††Collins, Thomas, Eſq. *Berners-ſtreet*

Collins, Benjamin Charles, Eſq. *Saliſbury*

Colliſon, Mr. John, *Caſhalton*

Combe, Harvey Chriſtian, Eſq. Alderman, M. P. *Great Ruſſel-ſtreet, Bloomſbury*

Combrune, Gideon, Eſq. *Berners-ſtreet*

Compton, Mr. Henry, *Charlotte-ſtreet, Pimlico*

††Conant, Nathaniel, Eſq. *Great Marlborough-ſtreet*

P Coningham, James, Eſq. *Pancras-lane, Queen-ſtreet*

Cook,

Cook, Major William, *Little Ormond-ſtreet*
Cooke, Mr. John Kenworthy, *Red Lion-ſquare*
Cooper, Mr. Benjamin, *Earl-ſtreet, Blackfriars*
Cope, William, Eſq. *Sanctuary, Weſtminſter*
Copely, Thomas, Eſq. *Netherhall, near Doncaſter, Yorkſhire*
P Coppens, B. M. D. *Ghent, Flanders*
Coſſyn, Mr. John, *Holborn*
Coſſer, Stephen, Eſq. *Abingdon-ſtreet*
Cottsford, Edward, Eſq.
Couſſmaker, Lannoy Richard, Eſq. *Gower-ſtreet, Bedford-ſquare*
Couſſmaker, William Kops, Eſq. *Hackney*
Cowell, George, Eſq. *America-ſquare*
Cox, Robert Albion, Eſq. *Little Britain*
Cox, Mr. Alexander Thomas, *Gravel-lane*
Cox, Mr. William, *Beaufort-buildings*
Coxwell, Mr. Henry, *Fleet-ſtreet*
Cradock, Joſeph, Eſq. M. A. and F. A. S. *Gumley, Leiceſterſhire*
Craig, Charles Alexander, Eſq. *Great Scotland-yard*
P Crathorne, Henry, Eſq. *of Crathorne, Yorkſhire, and Upper Brook-ſtreet* F. R. and A. S.
Crawford, John, Eſq. *Newman-ſtreet*
††Crawſhay, Richard, Eſq. *George-yard, Thames-ſtreet*
Crawſhay, William, Eſq. *ditto*
Crawley, Samuel, Eſq. *Ragnall Hall, Nottinghamſhire*
Creak, Mr. William, *Cornhill*
Criſp, John, Eſq. F. R. S. *Abroad*

Criſwell, Mr. William, *Bedford-row*
Crook, Thomas, Eſq. *Tytherton, near Chippenham, Wilts*
Croſs, William, Eſq. *Thorngrove-houſe, Worceſter*
Crowder, William Henry, Eſq. *Frederick's-place, Old Jewry*
††Crowther, Philip Wyatt, Eſq. *Guildhall*
Cunningham, William, Eſq.
Curtis, John, Eſq. *Mile-end*

D.

**Devonſhire, William, Duke of
Dartmouth, William, Earl of, F. R. S.
Dundas, Thomas Lord, F. R. and A. S.
Dundas, the Right Hon. Henry, M. P. *Somerſet-place*
Devereux, the Hon. George
P Dolben, Sir William, Bart. V. P. M. P. *Abingdon-ſtreet*
Dalliſon, Mr. Thomas, *Wapping*
Dancer, Mr. John, *Doncaſter*
P Daniel, John, Eſq. *Mincing-lane*
Daniell, James, Eſq. *Portman-ſquare*
Davenport, John, Eſq. *John-ſtreet, Adelphi*
D'Aubant, General Abraham, F. R. and A. S.
Davis, Mr. Jonas, *Chancery-lane*
Davies, the Rev. J. D. D. F. R. and A. S. Provoſt, *Eaton*
Davies, Rees, Eſq. *Swanſea*

Davſon,

Daviſon, Mr. Thomas, *Lombard-ſtreet, Whitefriars*
Dawes, John, Eſq. *Pall-mall*
Dawſon, William, Eſq. *Manchester-ſquare*
Dawſon, Mr. Thomas, *Weymouth-ſtreet, Portland-place*
Delafield, Joſeph, Eſq. *Caſtle-ſtreet, Long-acre*
Delavaud, George, Eſq. *New North-ſtreet*
††Dent, Robert, Eſq. F. A. S. *Temple-bar*
Dent, John, Eſq. M. P. F. A. S. *Temple-bar*
P††Dent, William, Eſq. *Batterſea-riſe*
Deſanges, Mr. William, *Wheeler-ſtreet, Spital-fields*
Deſenfans, Noel, Eſq. *Charlotte-ſtreet, Portland-place*
Deſbarres, Joſeph Frederick Wallet, Eſq. *Abroad*
Deſormeaux, Mr. James Lewis, *Pearl-ſtreet, Spital-fields*
Devall, Mr. John, *Portland-ſtreet*
Devaynes, John, Eſq. *Spring-gardens*
Dickinſon, Charles, Eſq. *Abroad*
Dickinſon, Henry, Eſq. *Leadenhall-ſtreet*
Digby, Kenelm, Eſq.
Ditcher, Philip, Eſq. *Eaſt Bergholt, Suffolk*
Dixon, Marcus, Eſq. *London-ſtreet, Fenchurch-ſtreet*
Dodſley, Mr. James, *Pall-mall*
Doe, Thomas, Eſq. *Bygrave Park, Herts*
††Dolben, John Engliſh, Eſq. F. A. S.
Dollond, Mr. Peter, *St. Paul's Church-yard*
Dollond, Mr. John, *ditto*

Dorrien,

Dorrien, Magens, Eſq. M. P. *Cavendiſh-ſquare*
Douce, Thomas Auguſtus, Eſq. *Townmaling, Kent*
Doughty, John, Eſq. *Aldermanbury*
Douglas, William, Eſq. *America-ſquare*
Dowbiggin, Mr. Lancelot
Dowbiggin, Samuel, Eſq. *Hatfield Regis, Herts*
Down, Richard, Eſq. *Bartholomew-lane*
Downer, Mr. Henry, *Fleet-ſtreet*
Drake, George, Eſq. *Bedford-ſquare*
Drake, Francis, Eſq. *Wimpole-ſtreet*
Drake, Mr. Samuel, *Margaret-ſtreet, Weſtminſter*
P Draper, Daniel, Eſq. *St. James's-ſtreet*
Draper, Mr. John, *Clayton place, Kennington-road*
Driver, Mr. William, *Kent-ſtreet-road*
Drummond, James, Eſq. *Sackville-ſtreet*
Duberley, James, Eſq. *Soho-ſquare*
Du Bois, John Frederick, Eſq. *James-ſtreet, Adelphi*
Du Bois, Edward, Eſq. *ditto*
Dundaſs, Robert, Eſq. M. P. *Somerſet-place*
Dunn, Samuel, Eſq. *Adelphi*
Dunnage, Mr. John, *Philpot-lane*
Dunnage, Mr. James, *ditto*
P Duroure, Colonel, F. R. and A. S.
††*Duval, the Rev. Philip, D. D. F. R. and A. S. *Newman-ſtreet*

E.

††P Egremont, George Wyndham, Earl of Eardley, Sampſon Lord, M. P. F. R. and A. S.

Einſiedel, his Excellency Count
Elphinſtone, the Honourable William
Eden, Sir John, Bart. M. P.
Earle, Henry, Eſq. *Gower-ſtreet*
Eaton, Rev. Stephen, *St. John's, Soho*
P Eaton, Peter, Eſq. *Weſtford, Eſſex*
Echardt, Francis Frederick, Eſq. *Whiteland Houſe, Chelſea*
P Eckerſall, John, Eſq. *Burford Houſe, near Dorking, Surry*
Eccles, the Rev. Allan Harriſon, *Bow, Middleſex*
P Eccleſton, Thomas, Eſq. *Scareſbrick, Lancaſhire*
Edwards, John, Eſq. *Bridge ſtreet, Blackfriars*
Edwards, Bryan, Eſq. F. R. and A. S. *Wimpole-ſtreet*
Edwards, Samuel, Eſq. *Stamford, Lincolnſhire*
Edwards, Mr. John, *at Mr. Wood's, No. 35, Broad-ſtreet buildings*
Ellill, John, Eſq. *Queen-ſtreet, Cheapſide*
Elliott, John, Eſq. *Pimlico*
P Errington, John, Eſq. *Stanhope-ſtreet, May-fair*
Eſdaile, Joſh, Eſq. *Albyns, Eſſex*
*††Ewer, Samuel, Eſq. *Hackney*
P Ewbank, Andrew, Eſq. *Upper Groſvenor-ſtreet*

F.

††Fife, James Earl of, F. R. and A. S.
††Falmouth, George Evelyn Lord Viſcount
Finch, Honourable Captain William, *Albury, near Guildford*

Fludyer,

Fludyer, Sir Samuel, Bart. *Baker-ſtreet, Manchester-ſquare*

P Fletcher, Sir Henry, Bart. M. P. *Southampton-row, Bloomſbury*

Farquhar, Sir Walter, Bart. *Great Marlborough-ſtreet*

Fairman, William, Eſq. *Lynſted, Kent*

Farmer, Samuel, Eſq. *Beckenham, Kent*

Farell, Rev. Charles, *Buggton, near Kimbolton, Huntingdonſhire*

Fearon, Henry, Eſq. *John-ſtreet, Adelphi*

Fellowes, Mr. William, *Tooley-ſtreet*

P Felton, Samuel, Eſq. F. R. and A. S. *Carburton-ſtreet, Fitzroy-ſquare*

P Fermor, William, Eſq.

Ferris, Samuel, M. D. and F. A. S. *Harpur-ſtreet*

Feuilleteau, William, Eſq. F. R. and A. S. *Charlotte-ſtreet, Rathbone-place*

Filmer, Beverſham, Eſq. *King's-road*

Fiott, John, Eſq. *Fenchurch-ſtreet*

Fitzherbert, Thomas, Eſq. *Roehampton, Surry*

Fletcher, Mr. Thomas, *Bridge-ſtreet, Blackfriars*

Fludyer, George, Eſq. M. P.

Forde, the Rev. Brownlow, *Margaret-ſtreet, Cavendiſh-ſquare*

Fordyce, George, M. D. F. R. S. *Eſſex-ſtreet, Strand*

Forſyth, William, Eſq. F. A. S. *Kenſington*

Fourdrinier, Henry, Eſq. *Lombard-ſtreet*

††Fowler, David Burton, Eſq. *Fig-tree-court, Temple*

P Franco,

P Franco, Jacob, Esq. *Robert-street, Adelphi*
Frankland, William, Esq. *Cavendish-square*
Franks, William, Esq. *Beech-hill, Endfield, Middlesex*
Fraser, James, Esq. *Golden-square*
Fraser, Simon, Esq. *King's-arms-yard, Coleman-street*
Fraser, Mr. David, *Great Pulteney-street*
Frend, Mr. George, *Abroad*
Frost, Mr. Thomas, *Goldsmith-street*
Fry, Edmund, Esq. *Type-street, Chiswell-street*
Fry, Mr. Joseph Storrs, *Bristol*
Fry, Mr. Henry, *Middle Moorfields*
Fullarton, Colonel William, F. R. S. *Parliament-street*
Fulton, Henry, Esq. *Watling-street*

G.

Gordon, Alexander, Duke of, K. T. and F. R. S.
Grosvenor, Richard Earl, F. R. S.
Glencairn, Earl of
Glasgow, George Earl of, F. R. and A. S.
P Gallway, Arundell Lord Viscount, M. P. and K. B.
P Greville, Right Honourable Charles, M. P. and F. R. S.
Greville, the Honourable Robert, F. R. and A. S.
Grey, Sir Henry, Bart. *Howick, Northumberland*

††Gascoyne,

††Gascoigne, Sir Thomas, Bart. F. A. S. *Partington, in the County of York*

Green, Major-General Sir William, Bart, F. R. and A. S. *Chandos-ſtreet, Cavendiſh-ſquare*

P Geary, Sir William, Bart. M. P. *Oxen Heath, Kent*

Galloway, James, Eſq. *Gower-ſtreet*

Gape, Joſeph, Eſq *Bridge-ſtreet, Weſtminſter*

Garland, Nathaniel, Eſq. *Epſom and Conduit-ſtreet*

Garrett, Daniel, Eſq. *Portſmouth*

Garthſhore, Maxwell, M. D. F. R. and A. S. *St. Martin's lane*

Garthſhore, William, Eſq. M. P. *Mancheſter-ſquare*

Gibbes, George Smith, M. A. *Magdalen College, Oxford*

Gifborne, Thomas, M. D. F. R. S. *Clifford-ſtreet*

P Godſchall, William Man, Eſq. F. R. and A. S.

Godwin, James, Eſq. *Wingfield, Berks*

Goldthwait, Thomas, jun. Eſq.

Golden, Robert, Eſq. *Red-lion-ſtreet*

Goldwyn, Henry, jun. Eſq. *Eaſt Smithfield*

Goodchild, Mr. Thomas, *Tooley-ſtreet*

Goodhew, William, Eſq. *Deptford*

Gotobed, John, Eſq. *Norfolk-ſtreet, Strand*

Gould, the Rev. William, D. D. F. R. S. *Staplford-Abbot, Eſſex*

Gordon, Edward, Eſq. *Bromley, Middleſex*

Goſling, Francis, Eſq. *Fleet-ſtreet*

Goſling, William, Eſq. F. A. S. *Fleet-ſtreet*

Graham,

Graham, George, Eſq.
Graham, Aaron, Eſq. F. R. S. *Great Ruſſel-ſtreet*
Grant, General James, *Sackville-ſtreet*
Græme, General David, *Lower Seymour ſtreet*
Grant, Major John, *Hill-ſtreet, Berkeley-ſquare*
††Grant, John, Eſq. *Fleet-ſtreet*
Grant, Peter, Eſq. *Fort Auguſtus, North Britain*
††Gray, Walker, Eſq. *London-ſtreet*
Gray, John, Eſq. *Somerſet-place*
††Green, Valentine, Eſq. F. A. S. No. 47, *Warren-ſtreet, Fitzroy-ſquare*
P Green, Rupert, Eſq. No. 13, *Berners-ſtreet*
Green, Mr. Joſeph, *Tower-ſtreet*
Green, Mr. William, *Deptford*
††Greene, Thomas, Eſq. F. A. S. *Gray's-inn*
Greene, Joſeph, Eſq. *New Baſinghall ſtreet*
Greenwood, Abraham, Eſq. *Steining-lane*
P Gregory, Robert, Eſq. *Berners-ſtreet*
Gower, Charles, Eſq. *Edmonton*
Greſley, Rev. William
Grieve, John, M.D. F.R. and A.S. *Norfolk-ſtreet, Strand*
†P Griffith, Edward, Eſq. of *Caernarvon*
Griffith, John, Eſq. *Queen-ſquare, Bloomſbury*
Groſvenor, Richard Erle Drax, Eſq. M. P. *Berkeley-ſtreet, Mancheſter-ſquare*
Groves, John, Eſq. *Sloane-ſtreet, Knightſbridge*
P Grote, George, Eſq. *Threadneedle ſtreet*
Groote, George William, Eſq. *Dean-ſtreet, Soho*
††Grubb, John, Eſq. *Lincoln's-inn-fields*
Grymes, Major John Randolph, *Knightſbridge*

Gubbins, Mr. James, *Surry-ſtreet*
Gwillim, Henry, Eſq. *Boſwell-court, Carey-ſtreet*

H.

††*Hardwicke, Philip Earl of, F. R. and A. S.
Howard, John Lord, K. B.
Hawke, Martin Lord
Heathfield, Francis Auguſtus, Lord
Haſlang, His Excellency Count
Harcourt, Honourable General William
Honeywood, Sir John, Bart. M. P. *Bedford-ſquare*
Hume, Sir Abraham, Bart. F. R. S. *Wormleybury*
Hanmer, Sir Thomas, Bart. *Hanmer, Flintſhire*
Heathcote, Sir John, *Edenſor, Langton Hall, Staffordſhire*
Harley, Right Honourable Thomas, Alderman, M. P. *Alderſgate-ſtreet*
Hadley, Mr. Nathaniel, *Long-acre*
Haigh, John, Eſq. *Old Jewry*
Hall, Mr. Abraham, *Aldermanbury*
Hall, Mr. Luke, *Gutter-lane, Cheapſide*
Hallet, William, Eſq. *Farringdon, Berks*
Hamilton, Rev. Anthony, D. D. F. R. and A. S. *St. Martin's Church-yard*
Hamilton, William, Eſq. *Blackheath*
Hamilton, William, M. D. *Old Broad-ſtreet*
††Hammond, William Parker, Eſq.
Hammond, Francis, Eſq. *Potter's Bar, Herts*
Handaſyde, Mr. Gilbert, *Green-walk, Southwark*
Hankey, Joſeph, Eſq. *Poplar*

Hanmer,

Hanmer, Job, Eſq. *Holbrook-Hall, Sudbury*
Hardcaſtle, Joſeph, Eſq. *Duck's foot-lane*
Harding, John, Eſq. *College-ſtreet, Weſtminſter*
P††Harman, Jeremiah, Eſq. *Princes-ſtreet, Lothbury*
Harriſon, Richardſon, Eſq. *Freern-Barnet, Middleſex*
Harrop, Joſeph, Eſq. *Great Marlborough-ſtreet*
Hart, Mr. Henry, *Lamb's-conduit-ſtreet*
Harris, the Rev. Evan, *Sloane-ſtreet, Knightſbridge*
Harwood, William, Eſq. *Hanwell-park*
Haſſal, Charles, Eſq. *Eaſtwood, Pembrokeſhire*
Haſſell, George, Eſq. *Hanover-ſtreet, Hanover-ſquare*
*Haſtings, Warren, Eſq. *Park-lane*
Haſwall, Mr. Alexander, *Wigmore-ſtreet*
Hawkins, John, Eſq. F. R. S.
Hay, Robert, Eſq. *Portland-place*
Hay, James, Eſq. *Great Portland-ſtreet*
Hayter, Mr. Jonathan, *Milk-ſtreet, Cheapſide*
Hayward, Mr. Richard, *Piccadilly*
††Heaviſide, Richard, Eſq. *Somerſet-ſtreet, Portman-ſquare*
P††Hebert, James, Eſq. *Great Portland ſtreet*
Hele, John, Eſq. *Charlotte-ſtreet, Rathbone-place*
Hemming, Mr. John
Henderſon, John, Eſq. *Terrace, Adelphi*
Hepworth, John, Eſq. *York*
Herne, William, Eſq. *Paternoſter-row*
Hewlett, Mr. William, *Strand*
Hewetſon, John, Eſq. *Tower-hill*
Heylyn, John, Eſq. *Iſlington, and Threadneedle-ſtreet*

Hilton, John, Eſq. *Ironmonger-lane, Cheapſide*
Hill, Richard, Eſq. *Plymouth, Glamorganſhire*
Hill, Edward, Eſq. *Albion-ſtreet, Blackfriars-road*
P Hoare, Charles, Eſq. F. A. S. *Fleet-ſtreet*
Hoare, Jonathan, Eſq. *Stoke Newington*
Hobbs, Mr. Joſeph, *Margaret ſtreet, Cavendiſh-ſquare*
Hobſon, Mr. William, *Thomas-ſtreet, Southwark*
Hobſon George, Eſq.
Hodgſon, Mr. George, *Lambeth-marſh*
Hood, Alexander, Eſq. *Royal Navy*
Hood, William, Eſq. *Carron Warehouſe, Erle-ſtreet, Blackfriars*
Hodgkinſon, Mr. Sampſon, *Snow-hill*
Holder, James, Eſq. *Aſh-park*
P Holland, Henry, Eſq. *Sloane-place, Knightſbridge*
Holland, Mr. Richard, *Half-moon-ſtreet, Piccadilly*
Holland, Mr. George, *High Holborn*
Holliday, John, Eſq. F. R. S. *Great Ormond-ſtreet*
Hollis, Thomas Brand, Eſq. F. R. and A. S. *Cheſterfield-ſtreet*
Holcombe, Rev. William, *Canon of St. David's*
Holmes, Mr. John, *Whitefriars*
Holme, Mr. William, *Baſs-court, Thames-ſtreet*
Home, Patrick, Eſq. M. P. *Gower-ſtreet*
Homfray, Samuel, Eſq. *Mirtry Tidvike, Glamorganſhire*
Honeybourne, Mr. Robert, *Stourbridge*
Honeywood, Filmer, Eſq. M. P. *Charles-ſtreet, Berkeley-ſtreet*

Hooper,

Hooper, Thomas, Eſq. *Panty Goitre, Monmouthſhire*
Horner, Thomas, Eſq. *Mell's Park, near Froome, Somerſetſhire*
Horton, Mr. William, *Newgate-ſtreet*
P Houghton, William, Eſq. *Conduit-ſtreet*
Howard, Barnard, Eſq. *Farnham, Suffolk*
P Hudſon, Vanſittart, Eſq. *Temple*
Hughes, Rev. Edward, *Greenfield-hall, Flintſhire*
Hulme, William, Eſq. *Twydale, Kent*
Hunt, Rowland, Eſq.
Hunter, John, Eſq. M. P. *Bedford-ſquare*
Hurt, Charles, Eſq. *Wirkſworth, Derbyſhire*
Huſſey, William, Eſq. *Saliſbury*
Hyde, John, Eſq.

I.

P Ilcheſter, Henry Thomas Earl of
††Ingilby, Sir John, Bart. M. P. F. R. and A. S.
Jacob, Mr. Joſeph, *Greek-ſtreet, Soho*
P Jamineau, Iſaac, Eſq.
Jardin, Mr. John, *Throgmorton-ſtreet*
Jeffery, George, Eſq. *ditto*
Jefferys, Thomas, Eſq. *Cockſpur-ſtreet*
Jefferys, Mr. George, *Brick-lane, Old-ſtreet*
P Jenkins, Thomas, Eſq. *Rome*
P Jenour, Joſhua, Eſq. *Fleet-ſtreet*
Jervoiſe, Jervoiſe Clark, Eſq. M. P. *Hanover-ſquare*

Jeudwine, Thomas, Eſq. *Baſinghall-ſtreet*
Ince, William, Eſq. *Broad-ſtreet, Carnaby-market*
Inglis, Hugh, Eſq. *Bedford-row*
Johnſon, Alexander, LL. and M. D. *Portland-ſtreet*
P Johnſon, Peter, Eſq. *York*
††Johnſon, John, Eſq.
Johnſon, John, jun. Eſq. *Berners-ſtreet*
Johnſon, Mr. James, *Bryanſtone-ſtreet*
Jones, Edward, Eſq. *Weprehall, Flintſhire*
Jones, Mr. Thomas, *Fiſh-ſtreet-hill*
Jones, John, Eſq.
Jones, John, Eſq. *Frankley, Wiltſhire*
Jones, Mr. Francis, *Grofvenor-ſtreet*
Jones, Mr. John, *Charlotte-ſtreet, Manſion Houſe*
Jourdan, Major Edward, *Harley-ſtreet*
Ives, Jeremiah, Eſq. *St. Clements, Norwich*
Ives, Jeremiah, Eſq. jun. *Cotton, near Norwich*
Jupp, Richard, Eſq. *King's-road*

K.

*Kinnoull, Robert Drummond Hay, Earl of
Kinnaird, George Lord, F. R. and A. S.
Kaye, Rev. Sir Richard, Bart. Dean of Lincoln, LL. D. F. R. and A. S.
Kappen, Mr. William, *Southampton-ſtreet, Strand*
Karr, Andrew Ramſay, Eſq. *Wimpole-ſtreet*
† Kendrick, Edward, Eſq. *King-ſtreet, Covent-garden*
Kent, Nathaniel, Eſq. *Fulham, Middleſex*
††Keyſall, John, Eſq. *Queen's-ſquare, Holborn*

Kidman,

Kidman, Mr. John, *Fleet-ſtreet*
King, the Rev. Richard, *Worthin, Shropſhire*
King, Mr. Thomas, jun. *Great Queen-ſtreet*
Kirkby, William, Eſq. *Exchequer Office, Temple*
Knill, John, Eſq. *Gray's-inn*
Knight, Mr. George, *Cliffe, near Rocheſter*
Knubley, Richard, Eſq. *Bath*

L.

Loughborough, Alexander Lord, F. R. and A. S. Lord High Chancellor of Great-Britain
P Leeds, Francis Duke of, K. G. F. R. and A. S.
P Lanſdown, the Moſt Noble the Marquis of
* Leiceſter, George Earl of, F. R. S. and Preſident of the Society of Antiquaries
**Liverpool, Charles Earl of, V. P.
P Lewiſham, George Lord Viſcount, F. R. and A. S.
Leiceſter, Sir John, Bart. M. P. *Piccadilly*
P Laurent, Sir Francis, Kt.
* Lewes, Sir Watkin, Kt. V. P. *Parliament-ſtreet*
P††Lambert, Charles, Eſq. F. A. S. *Temple*
Lambert, Aylmer Bourke, Eſq. F. R. and A. S. *Lower Groſvenor-ſtreet*
Landman, Iſaac, Eſq. *Royal Academy, Woolwich*
P Larkins, William, Eſq. *Blackheath Point*
Law, Thomas, Eſq. *Abroad*
Lawrence, Richard, Eſq. *Mincing-lane*

Lawrence, Richard James, Eſq.
††Leake, William, Eſq. *Parliament-ſtreet*
Leatham, William, Eſq. *Chatham-ſquare, Black-friars*
Leatham, Iſaac, Eſq. *Burton-le-ſtreet, Yorkſhire*
Lee, Stephen, Eſq. *Hackney*
Legh, George John, Eſq. *Pall-mall*
† Leigh, John, Eſq. *Bedford-ſquare*
Lettſom, John Coakley, M. D. F. R. and A. S. *Baſinghall-ſtreet*
Levy, Moſes Iſaac, Eſq. F. A. S. *Piccadilly*
††Lewis, John, Eſq. *Welbeck-ſtreet*
††Lewis, Percival, Eſq. *Lincoln's-inn*
† Lewis, William, Eſq. *Holborn*
Lewis, Thomas, Eſq. *Gower-ſtreet*
Liptrap, John, Eſq. F. A. S. *Whitechapel-road*
††Little, Charles, Eſq. *Wigmore-ſtreet*
Llewellyn, John, Eſq. *Penllengare, Glamorgan-ſhire*
P Lloyd, William, Eſq.
* Lock, William, Eſq. *Golden-ſquare*
P Long, Samuel, Eſq. M. P. *Hill-ſtreet, Berkeley-ſquare*
Longman, Mr. Thomas, *Cheapſide*
P Loveden, Edward Loveden, Eſq. M. P.
Lowndes, William, Eſq. *Scotland-yard, Whitehall*
Lowten, Thomas, Eſq. *Temple*
Lowth, Rev. Robert, *George-ſtreet, Hanover-ſquare*
††Lumley, William, Eſq. *Chancery-lane*

*Morton,

M.

* Morton, George Earl of, F. R. and A. S.
Mansfield, David Earl of, K. T.
P Malmeſbury, James Lord, K. B. and LL. D.
Milford, Richard Lord, M. P.
*P Monckton, the Honourable Edward, M. P. *Portland-place*
Middleton, Sir Charles, Bart. M. P. *Hertford-ſtreet, May-fair*
Moleſworth, Sir William, Bart. *Pencarrow, Cornwall*
* Mac Pherſon, Sir John, Bart. M. P.
Macleod, Major-General Norman, F. R. S. *St. Alban's-ſtreet*
M'Leod, John, Eſq. *Argyll-ſtreet*
† Mac George, William, Eſq. *New Bond-ſtreet*
P Mackreth, Robert, Eſq. M. P. *Cork-ſtreet*
Mackmurdo, Mr. Edward Longdon, *Bread-ſtreet*
P Macnamara, John, Eſq.
Mac Dougal, Mr. James, *Great Windmill ſtreet*
Mac Konochie, A. Lochart, Eſq. *Suffolk-ſtreet, Charing-croſs*
Malcolm, Mr. William, *Stockwell*
Malcolm, Mr. Jacob, *ditto*
Malo, Mr. Joſeph, *Pavement, Moorfields*
Malton, James, Eſq. *Norton-ſtreet, Portland-place*
Manley, John George, Eſq. *Braziers, Oxon*
Mainwaring, Mr. Thomas, *Strand*
Marriott, John Martin, Eſq. *Lamb's-conduit-ſtreet*

Marſh,

Marſh, Mr. William, *South-ſtreet, Groſvenor-ſquare*
Martin, James, Eſq. M. P. *Downing-ſtreet*
Martin, Matthew, Eſq. *Cleveland-row*
Martyn, the Rev. Thomas, B. D. F R. S. *Profeſſor of Botany, Cambridge, Frith-ſtreet, Soho*
Martin, Thomas, Eſq. *Great Marlborough-ſtreet*
††Maſkall, Samuel, Eſq. *Mitre-court, Milk-ſtreet*
Maſon, Miles, Eſq. *Finſbury-ſquare*
P Maſon, Rev. William, *York*
Matthews, Edward, Eſq. *Sol's-row, Tottenham-court-road*
Mayor, Mr. Joſeph, *Little Moorfields*
Mayhew, John, Eſq. *Broad-ſtreet, Carnaby-market*
Meares, John, Eſq. *Park-lane*
• Melville, General Robert, F. R. and A. S. *Brewer-ſtreet*
Meredith, Mr. William, *Hyde-ſtreet, Bloomſbury*
Mercer, George, Eſq. *Queen-Ann-ſtreet, Weſt*
Merry, William, Eſq. *Gower-ſtreet*
Metcalfe, Chriſtopher Barton, Eſq. *Weſt-Ham*
††Meyrick, John, Eſq. F. A. S. *Great George-ſtreet*
††Michell, Mathew, Eſq. *Beaufort-buildings, Strand*
Middleton, Mr. John, *Paradiſe-row, Lambeth*
††Mildred, Daniel, Eſq. *White-hart-court, Grace-church-ſtreet*
Miles, Mr. John, *Birmingham*
Millikin, Mr. Halley Benſon, *Whitechapel*
Millington, Langford, Eſq. *Tooting, and Berners-ſtreet*
Millington, Mr. Thomas, *Golden-ſquare*

P Mills, Abraham, Eſq. *Fence-houſe, Macclesfield*
Mills, Mr. George, *Old Swan-ſtairs*
Milnes, Richard Slater, Eſq. M. P. *Foiſton, near Ferrybridge, Yorkſhire*
Miniſh, Mr. William, *Whitechapel*
Miſt, Mr. Henry, *Long-acre*
Mitchel, Michael, Eſq. *Walthamſtow*
Montreſor, John, Eſq. *Harley-ſtreet*
Montolieu, Lewis, Eſq. F. A. S.
* Montagu, Mrs. Elizabeth, *Portman-ſquare*
Morſe, Leonard, Eſq. F. R. S. and S. A. *Great George-ſtreet, Weſtminſter*
Morſe, Major-General Robert, F. R. and A. S. Chief Engineer at *Gibraltar*
Morſe, Leonard Becher, M. A. *Great George-ſtreet*
Morris, Mr. William, *Whitcombe-ſtreet*
Moſeley, Walter Michael, Eſq. *near Worceſter*
Moſer, Mr. John, *Frith-ſtreet, Soho*
Mulcaſter, Colonel Frederick George, *Portſmouth*
Munn, Daniel Rolfe, Eſq. *Hammerſmith*
Murrey, John, M. D. *Bedford-ſtreet, Bedford-ſquare*

N.

P Norfolk, Charles Duke of, Preſident, F. R. and A. S.
**Northumberland, Hugh Duke of, V. P. K. G. F. R. and A. S.
††Northampton, Charles Earl of
Northeſk, William Earl of

Naſh,

Naſh, Mr. Thomas, *Worceſter*
Naſh, John, Eſq. *Caermarthen*
Newcombe, Mr. William, *Great Queen-ſtreet, Weſtminſter*
P Newton, Robert, Eſq. *Norton-houſe, Berks*
P Newton, Andrew, Eſq. *Cecil ſtreet, Strand*
De Neyva, Joſeph da Cunha Para, Eſq. *Artillery-place*
Nichols, Mr. Deputy, *Red-lion-paſſage, Fleet-ſtreet*
Nicolay, Mr. Frederick, jun. *St. James's Palace*
Nicol, Mr. George, *Pall-mall*
Noble, William, Eſq. *Pall-mall*
Nouaille, Peter, Eſq. *Greatneſs, Kent*
Noireterre, Mademoiſelle De, *Paris*
Norman, Robert, Eſq. *Cannon-ſtreet*
Nutting, Mr. Joſeph, *King-ſtreet, Covent-garden*

O.

* Orford, Horatio Earl of, F. R. and A. S.
P Oſſory, John Earl of Upper, F. R. and A. S.
Ogilvie, Scroope, Eſq. *Pall-mall*
Ogle, Mr. Thomas, *abroad*
Oldham, John, Eſq. *Sackville-ſtreet*
Ord, John, Eſq. F. R. and A. S. *Lincoln's-inn-fields*
P Oſwald, James, Eſq. *Albemarle-ſtreet*

**Portland,

P,

* **Portland, William Henry Duke of, V. P. K. G. F. R. and A. S.
P Plymouth, Otho Earl of, F. R. and A. S.
**Pitt, the Right Honourable William, M. P.
Pelham, the Right Honourable Thomas, M. P. *Stratton-ſtreet*
Powlett, the Right Honourable Thomas Orde, Governor of the Iſle of Wight, M. P. and F. A. S. *Hackwood, Hampſhire*
* Puſey, Honourable Philip, *Upper Brook-ſtreet*
Pulteney, Sir William, Bart. M. P. *Bath-houſe*
Packer, Mr. William, *King-ſtreet, Soho*
Page, Francis, Eſq. M. P. *Aſhton, Oxfordſhire*
Page, Francis, Eſq. *Newbury, Berks*
Page, Frederick, Eſq. *Aldermaſton, Berks*
P Paice, Mr. Joſeph, *Bread-ſtreet-hill*
Pakenham, Captain Edward, R. N.
Papworth, Mr. John, *Great Portland-ſtreet*
Pariſh, John, Eſq. F. A. S. *Gibraltar*
Park, Mr. James, *Baldwin's-gardens*
Parkes, Mr. Richard, *Broad-ſtreet, Bloomſbury*
Parkins, Mr. William, *Adelphi Wharf*
Parker, David, Eſq. *King's-mews*
Parker, Mr. William, *Fleet-ſtreet*
†† Parker, Mr. Samuel, *Bridge-ſtreet, Blackfriars*
Parker, Mr. Thomas, *Fleet-ſtreet*
Parkinſon, Mr. Thomas, *Bloomſbury-market*
Parnell, Mr. Hugh, *Church-ſtreet, Spitalfields*

Parry,

Parry, Mr. Edward, *King ſtreet, Cheapſide*
Parry, William, Eſq. *Norton hall, Wiltſhire*
Paterſon, William, Eſq. *Devonſhire-place*
Paxton, William, Eſq. *Queen-ſquare, Holborn*
Paxton, Mr. Chriſtopher, *Alderſgate-ſtreet*
††Payne, Samuel, Eſq. *Vauxhall*
Peacock, Mr. Lewis, *Symond's-inn*
Pearce, William, Eſq. *Craig's-court*
††Pearſon, James, Eſq. *Baſinghall-ſtreet*
Peel, Robert, Eſq. M. P. *Bury, Lancaſhire*
Peirſon, Peter, Eſq. F. R. and A. S. *Inner Temple*
Penruddock, Charles, Eſq. *Soho-ſquare*
†† Penn, Granville, Eſq. F. A. S. *New-ſtreet, Spring-gardens*
P Perin, William Philip, Eſq. F. R. and A. S. *Bloomſbury-ſquare*
Perry, John, Eſq. *Blackwall*
Perry, James, Eſq. *Lancaſter-court, Strand*
Perrott, George, Eſq. *Craycombe-houſe, Worceſter-ſhire*
Petrie, William, Eſq. F. R. and A. S. *Hertford-ſtreet, May-fair*
Petrie, John, Eſq. M. P. *Portland-place*
Phillips, Mr. Samuel, *St. George's-road, Black-friar's-bridge*
Pickering, Mr. Robert
Pitt, William Morton, Eſq. M. P. and F. R. S. *Arlington-ſtreet*
P††Pitt, Thomas, Eſq. V. P. *Wimpole-ſtreet*
Planta, Joſeph, Eſq. F. R. S. *Britiſh Muſeum*

Pollett,

Pollett, Mr. Robert, *North Weald, near Epping*
Pontopidan, Charles, Eſq. *Copenhagen*
Porter, William, Eſq. *Copthall-court, Throgmorton-ſtreet*
P Potter, Chriſtopher, Eſq. *Abroad*
Potter, George, Eſq. *Charing-croſs*
Pourcin, Mr. Joſeph, No. 143, *Tottenham-court-road*
Powell, David, jun. Eſq. *Little St. Helen's*
Powell, John Clark, Eſq. *ditto*
Powell, Baden, jun. Eſq. *ditto*
† Powell, Arthur Anneſley, Eſq. *Devonſhire-place*
Powlett, William, Powlett, Eſq. M. P. *Sambourne, near Stockbridge*
Powney, Henry, Eſq. *Lamb's-conduit-ſtreet*
P Prado, Samuel, Eſq. *Robert-ſtreet, Adelphi*
Praed, William, Eſq. M. P. *Tyringham, Bucks*
Pratt, John, Eſq. *Lower Brook-ſtreet*
Preſton, Mr. Thomas, *Strand*
Pricket, Thomas, Eſq. *Wanſtead, Eſſex*
Prinſep, John, Eſq. *Pall-mall*
Pryce, Benjamin, Eſq. *Saliſbury*
Pryce, Thomas, Eſq. *Devonſhire-ſtreet, Queen's-ſquare*
Pugh, David Heron, Eſq. *King-ſtreet, Cheapſide*

Q.

**Queenſbury, William Duke of, K. T.

**Richmond,

R.

**Richmond, Charles Duke of, V.P. K.G. F.R. and A.S.
**Radnor, Jacob Earl of, V.P. F.R. and A.S.
**Romney, Charles Lord, V.P. and F.R.S.
* Roſebery, Niel Earl of, K.T.
††P Rancliffe, Thomas Boothby Lord, V.P. M.P. F.R. and A.S.
Ruvo, Ettore Carrafa, Count
* Ryder, the Right Honourable Dudley, M.P.
††Ridley, Sir Matthew White, Bart. M.P. *Portland-place*
††Raby, Alexander, Eſq. *Steel-yard, and Allhallows-lane*
Ree, John, Eſq. *Angel-court, Throgmorton-ſtreet*
P Ramey, John, Eſq. *Ormeſby, Norfolk*
††Ramſbottom, John, Eſq. *Alderſgate-ſtreet*
††Ramſbottom, Richard, Eſq. *ditto*
Randoll, Robert, Eſq. *Craven-ſtreet*
Raſtrick, Mr. John, *Morpeth*
Rawlinſon, Abraham, Eſq. *Lancaſter*
Rawlinſon, Thomas, Eſq. *Lancaſter*
Reaſton, Francis Buſhell, Eſq. *Temple*
††Read, John, Eſq. *Great James-ſtreet, Bedford-row*
Read, Colonel Henry, *Lower Seymour-ſtreet*
Rehe, Mr. Thomas, *Shoe-lane*
Rees, the Rev. Abraham, D.D. F.R.S. *Hackney*

Reeves, John, Eſq. F. R. and A. S. *Cecil-ſtreet, Strand*

Reeves, Mr. William, *Strand*

Reid, Mr. John, *Fan-ſtreet, Alderſgate-ſtreet*

Remington, John, Eſq. *Milk-ſtreet, Cheapſide*

Rennie, Mr. John, *New-road, Blackfriars*

Repton, Humphrey, Eſq. *Hare-ſtreet, Eſſex*

Reynardſon, Samuel, Eſq. F. R. and A. S.

Reynolds, Major Thomas Vincent

Riddell, Colonel John, *Weymouth-ſtreet*

Rigg, John, jun. Eſq. *London-ſtreet*

Ring, Thomas, Eſq. *Reading, Berks*

Ritſon, Thomas, Eſq. *Ingram-court, Fenchurch-ſtreet*

Roberts, Rev. William Hancock, D. D. *Loughborough Houſe*

Robertſon, William, M. D. *Golden-ſquare*

††Robinſon, George, Eſq. *Harpur-ſtreet*

P Robinſon, Thomas, Eſq. *Vere-ſtreet, Cavendiſh-ſquare*

Robins, Mr. John, *Warwick-ſtreet*

Robſon, Mr. James, *New Bend-ſtreet*

Rodes, Cornelius Heathcote, Eſq. *Balborough, Derbyſhire*

Rondeau, James, Eſq.

Roſe, George, Eſq. M. P. *Old Palace-yard*

Roſe, George Henry, Eſq. *ditto*

††Roſs, George, Eſq. *Balſarroch, North Britain*

P Roſs, Colonel Patrick, F. R. and A. S. *Harley-ſtreet*

Rowcroft, Thomas, Eſq. *Lawrence-Poulteney-lane*
Rucker, Daniel Henry, Eſq. *Broad-ſtreet, City*
Ruddle, Francis, Eſq. *Queen's-ſquare, Bloomſbury*
Ruffo, Monſieur Vincent, *Naples*
Ruggles, Thomas, Eſq. F. A. S. *Clare, Suffolk*
P Ruſſell, Jeſſe, Eſq. *Goodman's-fields*
Ruſſell, John, Eſq. R. A. *Newman-ſtreet*
Ruſſell, William, Eſq. *Berwick, Northumberland*

S.

* Shrewſbury, Charles Earl of
P Shafteſbury, Anthony Earl of, F.R. and A.S.
Scarborough, George Auguſtus Earl of
P Stanhope, Charles Earl, F. R. S.
P Scarſdale, Nathaniel Lord
Stuart, the Honourable Charles, M. P.
P St. Aubin, Sir John, Bart. M. P. and F. A. S. *North Audley-ſtreet*
Sheffield, Sir John, Bart. *Portland-place*
Smith, Sir John, Bart. F. R. and A. S. *Sydling, Dorſetſhire*
††Sinclair, Sir John, Bart. M. P. Preſident of the Board of Agriculture, F. R. and A. S. *Whitehall*
††Staunton, Sir George Leonard, Bart. LL. D. F. R. S. *Bentinck-ſtreet*
Stephens, Sir Philip, Bart. M. P. F. R. and A. S.
††Smith, Sir Sidney, Kt. Commander Grand Croſs, Capt. R. N. of the Order of the Sword

††Smith,

††Smith, Major-General Edward
St. Barbe, John, Eſq. *Seething-lane*
Sadler, Jonathan, Eſq. *Lothbury*
Sanders, John, Eſq. *Mortlake, Surry*
Sargeaunt, Mr. John, *Great Queen-ſtreet*
Saſtres, Mr. Franceſco
Satterthwaite, Mr. John, *Mincing-lane*
Savage, Thomas, M. D. *Conduit-ſtreet*
Savage, Mr. James, *Great Queen-ſtreet*
Saunders, Thomas, Eſq. *Haydon-ſquare, Minories*
Saunders, Thomas, Eſq. *James-ſtreet, Golden-ſquare*
Saunders, Mr. George, F. A. S. *Oxford-ſtreet*
Saunders, Mr. Edward Grey, *Edgeware-road*
Sayer, Thomas, Eſq. *Bow, Middleſex*
Saxon, Mr. Samuel, *Parliament-ſtreet*
Schaw, Lieutenant Colonel John B. *Queen-Ann-ſtreet Eaſt*
Scholey, Mr. George, *Old Swan-ſtairs*
P Scott, David, Eſq. *Devonſhire-place*
Scott, Robert, Eſq. *Groſvenor-ſquare*
Scott, Hugh, Eſq. *Harley-ſtreet, Cavendiſh-ſquare*
Scott, Mr. Thomas, *Ludgate-hill*
Scottney, Bryan, Eſq. *Gower-ſtreet*
Seale, Mr. David, *Peckham*
Seddon, Mr. Thomas, *Alderſgate-ſtreet*
P Selby, Henry Collingwood, Eſq. *Twickenham-common, Middleſex*
Serra, Iſaac, Eſq. *King's-road, Gray's-inn-lane*
Sewell, Mr. John, *Cornhill*

Sewell, the Rev. George, *Byfleet, near Ripley, Surry*
Sewell, Mr. George, *London-ſtreet, Fitzroy-ſquare*
Shadwell, Henry, Eſq. *Beverley, Yorkſhire*
P Shakeſpeare, Mr. George, *Oxford-ſtreet*
††Sheldon, Thomas, Eſq. F. R. S. *Tottenham-court-road*
Sheppard, Thomas, Eſq. *Furnival's-inn*
Sheplee, Mr. Richard, *Horſhydown*
Sheplee, Mr. Thomas, *ditto*
Sherſon, Robert, Eſq. F. A. S. *New Bridge-ſtreet, Blackfriars*
Shiffner, Godin, Eſq. *Weymouth-ſtreet, Portland-place*
P Shipley, Mr. William, Gent. *Maidſtone, Kent*
P Shore, Samuel, Eſq. *Norton-hall, Derbyſhire*
P Shore, Samuel, jun. Eſq. *Lincoln's-inn*
Sibley, Joſeph, Eſq. *Market-ſtreet, Herts*
Simpſon, Mr. Thomas, *Chelſea Water-works*
Simpkin, Mr. Thomas, *Strand*
Skidmore, Mr. John, *High-Holborn*
Skinner, Thomas, Eſq. Alderman, *Aldersgate-ſtreet*
P Skottow, Nicholas, Eſq. *Berners-ſtreet*
Slade, John, Eſq. *Hammerſmith*
Slade, Thomas Moore, Eſq. *Chatham*
Smart, Mr. George, *Cambden Town*
Smirnove, Rev. James, *Upper Mary-le-bone-ſtreet*
* Smith George, Eſq.
† Smith, John Spencer, Eſq. *Abroad*
††Smith, William, Eſq. *Lombard-ſtreet*

Smith, Samuel, Eſq. M. P. *Clapham*
Smith, William, Eſq. M. P. *Clapham*
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Zenobio, Right Honourable Count Alviſe
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INDEX.

INDEX.

A.

	Page
ACORNS, premium for planting	4
AGRICULTURE, premiums for promoting	ibid.
Papers in	115
ALDER, premium for planting	16
APPLE-TREES, ſize and culture of	213
See Orcharding	
Expence of pruning	222
Obſervations on growth of	224
ARABLE. See Land	
ASH, premium for raiſing	17
ASHTON, Nicholas, Eſq. Silver Medal to	149, 334

B.

BALL, Mr. John, bounty to	253, 335
Letter from, on Opium	254
BALL, Philip, certificate ſigned	148
BANKS, letter on conſtructing	238
BARNSLEY, Thomas, certificate ſigned	188
BARRETT, Miſs, Gold Medal to	336
BARILLA, premium for	57
BARK, engrafting	207, 232

BARN-FLOORS, MOVEABLE, advantages of 300
price of 302
BASIS of PAINT, premium for 76
BEANS and WHEAT, premium for 29
Premium adjudged for 131
Quantity ſo cultivated 132
Method of culture 133
Produce ibid.
Account of ſale of 138
BEQUEST, form of recommended 114
BEVAN, J. certificate ſigned 188
BLAKE, Francis, certificate ſigned 148
BLIGHTS, taking off the ill effects of 27
BLOCK TIN, premium for refining 71
BOLTS, premium for method of driving 91
BORER, premium for deſtroying inſect ſo called 106
BOSWELL, Mr. J. W. premium to 273, 337
BOTANIC GARDEN, premium for 107
BRAMLEY, Richard Ramſden, Eſq. letter from 238
BREAD-FRUIT TREE, premium for planting 102
BRIGHTON, Charles Green, certificate ſigned 139
BUCKNALL, Thomas Skip Dyot, Eſq. his paper on Orcharding 207, 334

C.

CANDIDATES, order for attendance of 109
CANDLES from Reſin, premium for 61
CANKER, mode of preventing 208
foundation of 225
CATERPILLARS. See Fly on Hops
CATTLE, method of relieving when hoven 243

CHAIRMEN of COMMITTEES, list of 549
CHEMISTRY, premiums for discoveries in 57
Paper in 251
CHESNUTS, premium for sowing 8
CHIMNEYS, premium for cleansing 97
CIDER, how improved 209
CINNAMON, premium for 100
CLOTH from Hop-stalks, premium for 86
CLOVES, premium for 101
COCKCHAFER, premium for destroying the grub of 52
COCCUS MALI 256
CONDITIONS, GENERAL 110
COLONIES and TRADE, paper in 325
COLONIES, premiums for advantage of 99
CORN, machine for reaping, premium for 50
CROCKITT, Mr. John, premium to 183, 335

D.

DAVIS, Gold Medal to 145, 334
DAVIES, W. certificate signed 125
DENTON, James, Esq. Gold Medal to 117, 333
DIBBLING Wheat, premium for machine for 49
DRAINING. See Land
of Marsh-land, premium adjudged for 152
See Marsh
State of 153
Reasons against it 155
Quantity of Marsh drained 158
Natural produce of ibid.
Expence of per acre 173
DRAWING, premium for 77
of Outlines, premium for 77

DRAWING, Landſcapes 78
Hiſtorical 78
DYE BLACK on COTTON, premium for 73

E.

EAGER, Mr. Richard, bounty to 242, 335
Cut of his inſtrument for relieving Cattle 248
EARTHEN WARE. See Glazing
EGREMONT, Earl of, letter from 243, 304
ELLIS, Charles, certificate ſigned 246
ELM, premium for raiſing 10

F.

FADEN, Mr. William, Gold Medal to 336
FAIRMAN, Mr. his account of engrafting Bark 229, 234
FEATHERS, clearing, premium for 63
FIR, Silver, premium for raiſing 13
FISHING-NETS. See Netting
FLY on HOPS, and CATERPILLARS, premium for deſtroying 53
FRUIT-TREES, preventing Blights on, premium for 26
Method of removing 229

G.

GIDDY, Davies, certificate ſigned 181
GLAZING EARTHEN WARE, premium for 71
GOODLAD, Thomas, certificate ſigned 188
GRAFTS, ſhould be carefully choſen 223

H.

HANCOCK, Mr. William, premium to 308, 337
HARROW, New-conſtructed 198
Advantages of 199
Deſcription of 201
Moveable Joints for Wheels of 209
Certificates of utility of 203, 204
Price of 205
HAY, premium for making in wet weather 38
Paper on making 190
Machine for making, when particularly uſeful 193, 194
HEALTH of Fruit-Trees 212
HIGGS, Joſeph, certificate ſigned 188
HILL, William, certificate ſigned 147
HOE, improved, premium for 51
HONORARY PREMIUMS in Polite Arts 75, 76
HORSES, preventing turning, premium for 96

I.

JAMES, John, certificate ſigned 179
JENKINS, John, certificate ſigned 148
JOHN, Richard, certificate ſigned 179
IRON, premium for fine Bar 68
Premium for preſerving from Ruſt 73

K.

KALI for Barilla, premium for 104

KINGSTON, John, Esq. premium adjudged to 141, 334
See Potatoes
KNIGHT, Mr. Edward, bounty to 198, 335

L.

LAKE, Mr. letter from on Fruit-trees 229
LAND, premium for ascertaining the component parts of 40
Draining, premium for 42
Improving, premium for 44
Gaining from the Sea 48
Premium adjudged for 152
Marsh drained, products of 178
LAND, Draining, premium adjudged for 183
LARCH, premium for raising 11
LATHAM, Dr. his letter on English Opium 267
LEVER improved 295
Cut of 296
LLOYD, Rev. J. R. Gold Medal to 120, 333
LOADING GOODS, premium for Machine for 91

M.

MACHINE for raising Coals, Ore, &c. premium for 93
Water 93, 94
MAJENDIE, Lewis, Esq. premium adjudged to 131, 334
MANUFACTURES, premiums for promoting 85
Paper in 271
MANURES, premium offered for 45
MASQUERIER, Mr. J. J. Silver Pallet to 336

MARSH LAND. See Draining and Land
Diſeaſes prevailing near 159
Mode of Draining 159, 163
Quantity of Water diſcharged 162
Smell ariſing from 164
Pared and burnt 167
Expence of Draining 173
Method of Culture 168, 169
How made productive 170, 172
MASTERS, Miſs M. A. Silver Medal to 336
MECHANICKS, premiums in 90
Papers in 293
MEMBERS CONTRIBUTING, Liſt of 351
MIDDLETON, Mr. John, thanks to 190
Paper from on making Hay ibid.
Plate and Deſcription of his Machine 195
MILL, PARISH or FAMILY, premium for 92
MODELS and MACHINES, Liſt of 343
MOGFORD, Anthony, certificate ſigned 147
MOLINA, Chevalier de, premium to 315, 337
MORSHEAD, Sir John, letter from on Orcharding 236
MOYLE, Mr. Richard, Gold Medal to 152, 335
MYALL, Barker, certificate ſigned 140

N.

NATURAL HISTORY, premiums for 81
NETTING, premium adjudged for 273
Plate and Deſcription of a Machine for 277
NUTMEGS, premium for 99

O.

Oaks, premium for raiſing 5, 6
in Compaſs Forms, premium for 7
Premiums adjudged for 117, 120
Number of 119, 120
Culture of 121
Fenced by Scotch Firs ibid.
Officers, Liſt of 347
Oil, Whale or Seal, premium for refining 62
beneficial to Fruit-trees 218
Opium, mode of preparing in England 259
Quantity may be collected 263
Orcharding, paper on 207
varies according to circumſtances 217
recommended 227
how beſt promoted 228
Orchardist General, title of 216
Orchards, premium for planting 20, 24
Proper ſoil to be choſen for 209
Advantage of culture 210, 217
Comparative experiments on 219
How trees to be planted in 220
Oziers, premium for planting 15
Failure of, and why 169

P.

Paint. See Baſis of
Paper from Raw Vegetables, premium for 87
Parsneps, premium offered for 37
Pearson, Dr. George, his letter on Engliſh Opium 269

PEAT, thoughts on 165
Of ſlow growth 166
Its uſes pointed out 167
Drained 183
Mode of draining 185
Increaſed value of, when improved 186, 187
Expence of draining 188
PLANTS which thrive on improved Marſh-land 170
POLITE ARTS, premiums for promoting 75
Conditions annexed to 82
POLLET, Mr. his obſervations on Wheat 135
POOR, premium for maintaining 88
POPPIES, method of culture 257
POTATOES, premium for increaſed culture of 33, 34
for feeding Cattle and Sheep 34
Premium adjudged for 141
injured by Salt 169
Method of culture 141
good preparation for Wheat 142
PRATT, John, certificate ſigned 143
PREMIUMS extended to the whole Iſland of Great-Britain 111
PREMIUMS in Agriculture 4
Chemiſtry 57
Colonies 98
Manufactures 85
Mechanicks 90
Polite Arts 75
PRIEST, P. certificate ſigned 148
PRESENTS received 339
PRITCHARD, Henry, certificate ſigned 119
PROVISIONS, premium for preſerving ſalted 65
PRUNING. See Orcharding 214
How regulated ibid.

PRUNING, advantage of 223
PUDDLING recommended 249

R.

REWARDS beſtowed, Liſt of 331
RHUBARB, premium for cultivating 39
Premium adjudged for 145
Proper ſoil for ibid.
Method of culture 146
Great loſs in drying 150
How cured ibid.
Age of 149
RICHARDSON, Thomas, Eſq. Silver Medal to 124, 333
RIVERS, claim for clearing of Weeds 315
ROBINSON, William, certificate ſigned 144
ROCKS, premium for boring 98
ROLLING CART deſcribed 171
ROOTS and HERBS for feeding Cattle, &c. premium for 35
ROPE or CHAIN of METAL, premium given for 308
Cut of 313

S.

SALT, obſervations on 169
SANDERSON, George, certificate ſigned 130
SCOT, D. certificate ſigned 330
SEA, letter on embanking againſt the 238
SHEEP, cure of Rot in, premium for 53
Ill effects of Fly on 54
Protecting, premium for 55

SILK, premium for 85
Machine for carding 85
Raw Silk, from Bengal, organzined 327
SMOKE, condenſing, premium for 60
Deſtroying, premium for ibid.
SOUTH SEA, diſcovery of a Paſſage by Land to, premium for 105
SPIRIT, premium for proof 64
STARCH, premium for making 65
STEAM, premium for increaſing 66
SURVEYS of COUNTIES, premiums for 79

T.

TIMBER. See Trees
Premium for preventing Dry Rot in 67
TIMBER-TREES, Silver Medal given for 124
Quantity of planted 125
When planted 126
Sorts of ibid
How flouriſhing 129
TRANSIT-INSTRUMENT, premium for 90
TREACLE, premium for obtaining Sugar from 58
TREES, certificates relating to 24
TREES, Timber 19
Premium for ſecuring 24
for uſe, when expoſed to the weather, premium for 25
Removing Fruit 207
TURNEPS, premium for 31
TURNEP-ROOTED CABBAGE, premium for 33

V.

VEGETABLE FOOD, premium for 32
VEGETABLES, preſerving Seeds of, premium for 57
UPTON, Mr. John, bounty to 299, 337
His Barn-floor deſcribed ibid. 305

W.

WASTE MOORS, premium for improving 46
WATER MEADOWS, premium for 43
Preſerving ſweet, premium for 59
Purifying brackiſh, premium for 72
Preventing freezing, premium for 95
WATTS, Miſs H. L. Silver Medal to 336
WEEDS, machine for clearing Rivers of 315
WHALES, premium for taking 90
WHEAT, comparative culture of, premium for 28, 29
Cultivated after Beans 133
Quantity produced, 135. See Pollet
WHEEL-CARRIAGES, premium for improving 95
WHITE LEAD, premium for preparing 69
WICKS for CANDLES or LAMPS, premiums for 87
WILLYAMS, Henry, certificate ſigned 181
WIRE-WORM, premium for deſtroying 52
WILSON, Mr. his letter on Engliſh Opium 270
WISSETT, Robert, Eſq. Gold Medal to 327, 338
WROTTESLEY, Sir John, letter from 189
WYNDHAM, Mrs. Silver Medal to 295, 337

Y.

YEAST, ſubſtitute for, or preparation of, premium for 64

THE END.

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DIRECTIONS TO THE BOOKBINDER:

PLACE the Print of Mr. Hooper, as the Frontiſpiece to the Volume.

View of Mr. Middleton's Machine at work, to face page 197.

Mr. Edward Knight's New-conſtructed Harrow, to face page 201.

Mr. J. W. Boſwell's Netting Machine, to face page 277.

Mr. Upton's New-conſtructed Barn-Floor, to face page 304.

The Chevalier de Betancourt Molina's Machine for cutting Weeds in Navigable Canals or Rivers, to face page 317.

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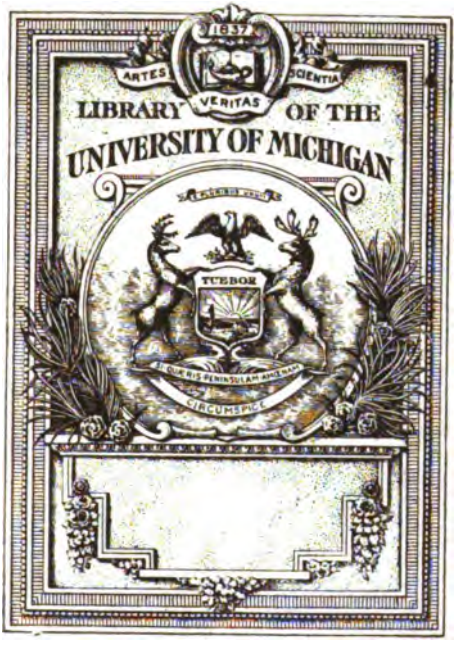

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